Environment Canada | Environnement Canada

Systems and Informatics Directorate | Direction generale des systemes et de l'informatique

FINANCE AND ADMINISTRATION SERVICE | SERVICE DES FINANCES ET DE L'ADMINISTRATION

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INFORMATICS MANAGEMENT PLAN

JUNE 90

Disponible en français de la
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INFORMATION MANAGEMENT PLAN (IMP) - JUNE 90

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INFORMATICS MANAGEMENT PLAN (IMP)

EXECUTIVE SUMMARY.

GENERAL REMARKS.

The Director General of the Systems and Informatics Directorate has the functional authority for departmental informatics activities (EDP, telecommunications and office technology). The Informatics Planning and Coordination Branch (IPC) collaborates with the Service Informatics Authorities to prepare the IMP and to improve integrated planning and coordination of these activities in the operating programs.

The following officers of the Systems and Informatics Directorate have authority to sign memoranda representing the Information Technology position of the department: K.M. Magar, A.W. Douglas, J.-C. Lecomte. A.M. Bystram is the departmental focus for Information Holdings.

PART 1, INFORMATION HOLDINGS.

The Department completed a review of the Records Management function. It resulted in a Records Management Improvement Program addressing four main areas: traditional text-based Records Management; automated Records Management systems; management of electronic records created using office automation systems (All-In-One); and information holdings management. The Records Management Improvement Program was developed in conjunction with, and endorsed by, all Services through their participation in Records Management Working and Steering Committees.

An EC approach and Strategic Action Plan (Information Holdings - The Environment Canada Approach) was prepared and reviewed with central agency officials from Treasury Board, the National Archives, and the National Library. The approach and plan were developed in conjunction with, and approved by, the newly constituted Information Holdings Standing Committee. This new Committee (a reconstituted Records Management Steering Committee) was charged with the responsibility of overseeing implementation of Management of Government Information Holdings (MGIH) in Environment Canada. It will be assisted in this task by an Information Holdings Working Committee.

PART 2, INFORMATION TECHNOLOGY.

The following is a summary of highlights from Part 2, Information Technology.

A) Department.

The 1988/89 informatics expenditures were $ 96.6M and 597 person-years. The 1989/90 expenditures were $ 103.7M and 613 person-years. The Department plans expenditures of $ 110.7M and 633 person-years in 1990/91, $ 115.9M and 636 person-years in 1991/92, and $ 120.8M and 639 person-years in

1992/93. It is expected that implementation of the environmental Green Plan will have a significant impact on future informatics expenditures. The extent of this growth will not be known until the fall of 1990. The next IMP will reflect these changes.

These figures show a reduction in expenditures when compared with earlier ITSPs. This is due to the fact that under new guidelines from Treasury Board, indirect costs such as Accomodation, Interest on Working Capital, Departmental Support Costs, Government Support Costs and Other Support Costs are not required in the expenditures tables. The reduction in person-years is due to the fact that word-processing operators and voice-telecommunications operators are no longer considered as informatics person-years.

A number of committees, such as the Departmental DOTS Planning Committee (DDPC), the Departmental Advisory Committee on Information Management (DACIM), the DOTS Inter-Service Committee (DISC) and the Departmental Advisory Committee on Artificial Intelligence (DACAI), have been set up to oversee system development requirements and informatics activities of the Department. The functional heads for Information Technology, the Informatics Authorities, meet on a regular basis to coordinate departmental informatics activities.

B) Administration Program.

The System & Informatics Directorate (SID) underwent a complete reorganization in December 1988 to address a number of new responsabilities including the support of the Departmental Office Technology System (DOTS). Within the new organization, more emphasis was placed on technical support, capacity planning, new product evaluation, network management, system planning, application development, and communication of technical information and advice.
The Systems & Informatics Directorate (SID) has begun the introduction of Data Management concepts in the Department and will develop standards in data management.

In the financial area, FINCON is being redesigned to meet defined user requirements as well as the Office of the Comptroller General needs. The new system is currently being developed for a target implementation of April 1992. The Executive Information Systems (EIS) are emerging as another important management decision tool and linkages to the financial data will be necessary.

The Departmental Management Services Directorate (DMSD) continued the implementation of systems such as the Material-In-Use (MIU) system, the Automated Procurement & Contract System (APACS), the Departmental Records Automated Management System (DRAMS) and the departmental library system (ELIAS).

In the personnel area, development work continued on the Human Resources Management Information System (HRMIS). The Employee, Leave Reporting, the Position and the Employment Equity modules are now operational as well as On-line Pay. The Staffing Module is under development.

C) Atmospheric Environment Service.

AES plans to replace the present Cray X-MP supercomputer and a procurement study has been started in summer 1989. The new supercomputer facility should be installed by April 1991 and become fully operational by June 1992.

Other AES initiatives include the Interactive Weather Presentation Station Project, the Weather Services office Implementation and the Climate Ice Data Archiving System (CIDAS).

D) Conservation & Protection.
For fiscal-year 1988/89, Conservation and Protection was divided into the following organizational components: Management and Admin. Support, Canadian Wildlife Service, Environmental Protection, and Inland Waters. In 1989/90, the Service commenced reporting against the Program Activity Structure which is divided as follows: Management and Admin. Support, Natural Resource Conservation, Environmental Quality Protection, and Environment Ecomomy Management.

Several significant DOTS acquisitions occurred to expand the DOTS network within C&P both at the NCR and in the regions. This is specifically Phase 4 of the DOTS implementation plan which includes the expansion of the Network to district offices.

At the National Water Research Institute (NWRI) planning will commence in order to replace the CYBER computer in 1992/93.

E) Canadian Parks Service.

A major effort in CPS informatics is the development of an informatics strategic or long range plan to define the information needs and the data, systems plus hardware and software architectures to support CPS business needs.

The result will be documentation on the systems required for the next 3-5 years and the overview of the technical design, including the linkages to other applications. This will provide a framework for users as to how identified systems and processes will fit together. It will also provide a focus for all future development.

F) Departmental Office Technology System (DOTS).

During 1988-89, the network grew from 35 computer nodes supporting 1,300 users to 65 computer nodes supporting 3,000 users and during 1989-90, 20 computers were added or upgraded on the network to support over 4,000 users.

The Department has prepared a DOTS Technology Strategy and Plan to describe the longer term direction for the EC DOTS Network in terms of overall objectives that must be met to provide a platform for computer communications and data processing for applications within the department.

The purpose of this Plan is to describe how the various aspects of the Strategy will be implemented via enhancements and changes to be made to the hardware, software and telecommunications components of the Network over the shorter term (up to 3 years).

INFORMATION MANAGEMENT PLAN

PART 1, INFORMATION HOLDINGS

INTRODUCTION

In the Winter of 1987, the Department completed a Records Management audit which highlighted a number of weaknesses and which led to a thorough review of the Records Management function in the Department. The review resulted in a Records Management Improvement Program addressing four main areas: traditional text-based Records Management; automated Records Management systems; management of electronic records created using office automation systems (All-In-One); and, importantly, in response to early drafts of MGIH, information holdings management. The Records Management Improvement Program was developed in conjunction with, and endorsed by, all Services through their participation in Records Management Working and Steering Committees.

One of our first steps as a Department was to designate the central focus for Information Holdings in the person of Agatha M. Bystram, then Director of Document and Library Services, now Director of the new Information Holdings Management Branch. This designation was made by the Deputy Minister in January of 1989, eight months before the official release of the MGIH policy.

During the Summer months, an EC approach and Strategic Action Plan (Information Holdings - The Environment Canada Approach) was prepared and reviewed with central agency officials from Treasury Board, the National Archives, and the National Library. The approach and plan were developed in conjunction with, and approved by, the newly constituted Information Holdings Standing Committee. This new Committee (a reconstituted Records Management Steering Committee) was charged with the responsibility of overseeing implementation of MGIH in Environment Canada. It will be assisted in this task by an Information Holdings Working Committee.

STRATEGIC ACTION PLAN

The EC Strategic Action Plan is broken down into strategic components, and, within strategic component into specific action steps as follows:

STRATEGY COMPONENT

ACTION STEPS	TIMEFRAME
. **Coordination of Information Management Organizations/Disciplines**	
. Nomination of Central Focus	Complete
. Establishment of IH Standing Committee (IHSC) (Corporate/Service-Functional/Operational)	Complete
. Establishment of IH Working Committee (IHWC)	Complete
. **Management Support**	
. Agreement of IHWC on EC Approach	Complete

- Agreement of IHSC on EC Approach — Complete
- Discussion of EC Approach with Central Agencies) (TB/National Archives/National Library) — Complete
- Presentation of EC Approach to DM — Feb 90
- Presentation of EC Approach to EMC (in conjunction with presentation by TB) — Mar 90
- Presentation of EC Approach to Service Mgmnt Committees — On Request
- Presentation of EC Approach to Managers throughout Department — On Request

- **Information Management Planning & Accountability Framework**

  - Development of Information Management Model — 90/91
  - Development of Information Management Accountability Framework — 90/91
  - Development of Information Management Plan — 90/91
  - Development of Umbrella Policy — 91/92

- **Information Holdings Integration**

  - Inventory of Holdings
    - Preliminary (P) — 90/91
    - Detailed (D) TBD
  - Integration into Departmental Classification Systems (DRAMS/ELIAS)/Development of Schedules — TBD
  - Production of/Inputs to — (P) 90/91, (D) TBD
    - Corporate Inventory of Holdings
    - Access Register
    - Privacy Index
    - Security Classification/Designation Guide
    - Federal Register of Collected Information
    - National Union Catalogue

- **Development/Refinement of Systems & Linkages**

  - Continue development/refinement of DRAMS & ELIAS — 90/91
  - Implement in HQ & Regional Centres — TBD

Coordination of Information Management Organizations/Disciplines

The environment in which the management of our information holdings must occur is very complex. One of the factors which contributes to this complexity has to do with the number of different organizations and disciplines involved (for example, Records, Library, Access, Privacy, Information Collection, Security of Information, Data Administration, Communications, etc.) and to the fact that these organizations/disciplines operate within a very large and decentralized Department.
Our first strategic component, therefore, has to do with the coordination of our information management organizations and disciplines through:

- the nomination of a central focus for MGIH, and

- the establishment of Information Holdings Standing and Working Committees comprising Corporate and Service representation.

These action steps have been completed.

Management Support

Our second strategic component has to do with management support, understanding that this is a prerequisite to successful implementation of MGIH. To achieve this support and approval, an intensive awareness program must take place. This awareness program has begun in Environment Canada and, to date, has resulted in agreement by the Information Holdings Standing and Working Committees on an EC approach, as well as the support of Treasury Board, the National Archives, and the National Library.

The next steps will include presentations to our Deputy Minister followed by a joint Treasury Board/Environment Canada presentation to the Department's Executive Management Committee. These will basically be information sessions as each Service representative has already approved the EC approach through the Information Holdings Standing Committee. This will be followed by presentations to Service Management Committees and to managers throughout the Department on request.

Information Management Planning and Accountability Framework

At the present time, there are no all-inclusive policies, procedures, standards, or guidelines for the management of information as a Corporate resource, and roles, responsibilities, and accountability have not been defined for the management of information in the same way as they have been for the management of financial, human, and material resources. In order to clearly delineate roles, responsibilities, and accountability, the Department requires an information management model and accountability framework for the management of information at each stage of its life cycle from planning for its acquisition (for example, through an information collection or public opinion research survey) through to its ultimate disposition through destruction or archival preservation, and on to the evaluation and audit of the efficiency and effectiveness of the function itself. We intend to launch a project to define the model and accountability framework in FY 1990/91.

We also intend to launch a project to define the components, structure, and format of the new Information Management Plan, including not only the management of information technology, which was the case with the Information Technology System Plan (ITSP) in the past, but also the management of information holdings and the related activities in Records, Library, Access and Privacy, Information Collection and Public Opinion Reseach, Forms Management, and so on.

The outputs of these projects will be incorporated into a policy for the management of the Department's information holdings. This will be an umbrella policy which will complement the newly-issued TB policy on information management and sub-policies on the management of information holdings and information technology.

The umbrella policy will provide an overview of EC's information-related policies and procedures with pointers to the appropriate detailed policies and procedures. We foresee an information management.

Information Holdings Integration

MGIH requires that the Department maintain a current, comprehensive, and structured classification system which provides an effective means for organizing and locating information, and which, in composite form, comprises a corporate inventory of information holdings. These holdings must also be identified in appropriate Government public reference sources (for example, the Access Register and the Privacy Index). The Department has holdings in which are not yet integrated into its subject classification systems and which are not reflected in its public reference sources. These holdings must be inventoried, integrated into Departmental Classification Systems, and scheduled for disposal in accordance with the requirements of the National Archives Act. The holdings will be integrated into existing records and library systems in DRAMS and ELIAS to the extent possible, and linked to the Department's Information Technology Management System (ITMS) through the use of a common thesaurus. The inventory and Government public reference sources will be produced as outputs. This will ensure that the inventory and other public reference sources are complete, accurate, and consistent one with the other.

Our approach to integrating our holdings will be to:

- identify the holdings at the macro level: what collection types do we have and where;
- establish priorities and schedule the holdings for integration;
- include these activities in Information Management and Operational Plans;
- undertake more detailed inventories starting with our most critical holdings;
- integrate or link the holdings to existing records and library classification systems (DRAMS, ELIAS) and link them to the Departmental Information Technology Management System (ITMS) through the use of a common thesaurus;
- use these systems to maintain our Corporate inventory of holdings and to produce the necessary outputs for Central Agencies (for example, the Access Register and Privacy Index); and
- prepare retention and disposal schedules for approval by the National Archivist.

We plan to do a preliminary inventory of holdings in fiscal year 1990/91, and, based upon this, to scope out a methodology and time frames for the more detailed inventory. In doing the preliminary inventory, we intend to take full advantage of any existing inventories so as not to duplicate the collection effort.

It should be noted that the National Archives has established jointly, with EC, a senior level Planning Committee to which we can turn for guidance as we navigate ourselves through this exercise.

Continuing Development and Refinement of Systems and Systems Linkages

The Records (DRAMS) and Library (ELIAS) systems will undergo further development and refinement and appropriate systems linkages will be established and refined: for example linkages between DRAMS and ELIAS to permit the carry-over of keyword searches from one system to the other, linkages with the All-In-One office automation software to permit the life cycle management of documents electronically created and transmitted on DOTS, linkages with the Correspondence Tracking System to permit the life cycle management of the Department's Executive correspondence, linkages with ATIP to permit the life cycle management, tracking, and statistical reporting of access requests, and the capability to produce or input to the Departmental inventory of holdings, the Access Register, the Privacy Index, the Security Classification/Designation Guide, the Federal Register of Collected Information, and the National Union Catalogue.

DRAMS and ELIAS will be implemented across the country in accordance with implementation plans being developed by the operational Services. These implementation plans are being prepared based on space and processing power on regional computers and on a prioritization and scheduling of all Departmental applications.

The implementation strategy will take into account the installation of software, the provision of access to the systems, and the conduct of training.
Optimum implementation of DRAMS and ELIAS and other Departmental applications is dependent upon the development of a distributed applications capability. This would allow regional centres to access the master Departmental Classification Index to identify their holdings and allow distribution, to the regional centres, of that portion of the Classification Index so identified. It is this functionality that will allow us to maintain the integrity of the Master Index while still allowing local management of holdings.

PART 2, INFORMATION TECHNOLOGY.

DEPARTMENT & SERVICES NARRATIVE

A) Department.

Committees have been set up to oversee system development requirements and activities of the Department, as described below.

The Departmental DOTS Planning Committee (DDPC). This committee is composed of Senior Executives responsible for Information Technology and Finance functions at the Departmental and Service levels, and functional managers at the Departmental level. This committee represents the business concerns of the department and has the responsibility to review and advise on major Departmental and Service Information Technology policy, plans, service levels and resource requirements; to provide direction to the Departmental Advisory Committee on Information Management (DACIM); and to review and advise on the needs, priorities, plans and resource requirements for major Departmental and inter-Service DOTS applications and those Service applications which impact Departmental or cross-Service systems.

The Departmental Advisory Committee on Information Management (DACIM). This committee is composed of representatives of Service Informatics Authorities and representatives from the functional directorates within the Administration Program. This committee represents the Information Technology concerns of the department and has the responsibility for providing advice, guidance and recommendations to the DDPC and to the Director General, SID, on matters relating to Information Technology, and in particular to computer-based information systems, in the Department. The principal focus of committee activity is on technical matters such as data management, systems requirements, systems development issues, methodologies, common-use software packages, linkages between systems, and standards.

The DOTS Inter-Service Committee (DISC). The committee is composed of DOTS Coordinators and SID DOTS management and has the responsibility to provide advice to the DDPC and to the Director General, SID, on the impact of priorities, plans and implementation of requests for new services. The committee is also responsible for revieving the assignment of resources, priorities and procedures for continued operation of the DOTS network as a Departmental resource.

The Departmental Advisory Committee on Artificial Intelligence (DACAI) was formed and a work program established. This Committee, with representation from across the department exists to promote and coordinate innovative applications in artificial intelligence. DACAI serves as the Steering Committee for projects stimulated through the ISTC AI R&D Fund. Two successful workshops on AI and expert systems were organized and attended by 85 staff from all Services.

PROCESS FOR THE REVIEW OF COMPUTER-BASED SYSTEMS BY DACIM and the DDPC

DACIM deals with inter-Service, cross-functional-area and departmental management information systems, and those Service applications with potential for inter-Service use or which will have impact on, duplicate some functions of, or compete with the above systems. These will be referred to collectively as IS/D MISs.

The Departmental DOTS Planning Committee (DDPC) approved the following four principles at its meeting of September 27, 1989:

a) All IS/D MISs will be implemented on or linked through DOTS;

b) Oracle is the Departmental database management system software standard;

c) All new IS/D MISs, including those Service applications mentioned above, will be reviewed by DACIM and the DDPC.

d) No new IS/D MISs will be developed or implemented on or linked through DOTS unless reviewed by DACIM and the DDPC.

To implement these principles a review process was developed as follows:

1. Each member of DACIM has a responsibility to identify, and bring to the committee, IS/D MISs (including those Service systems mentioned in the first paragraph) under consideration in his or her area of responsibility as far as his work with the committee is concerned.

2. Subcommittees of DACIM, one for each of the "families" of applications identified have been established to review the applications. Each subcommittee consists of at least three members.

3. For each application, a Business Case Summary (BCS or its equivalent in the case of Service systems) is prepared (by the sponsor with the help of the appropriate DACIM member), and updated as appropriate, at the **Concept, Approval-in-Principle and final Approval stages.**

4. The BCS is submitted to DACIM as a backgrounder for the review of the MIS by the appropriate subcommittee, at each of the three stages in 3., using the criteria adopted by the committee.

The review at the Concept stage is necessarily less comprehensive than at the later stages simply because of the amount of detail available about the MIS. As soon as possible a schedule for development and implementation of the MIS should be obtained, and updated, so that planning for DOTS machine and support capacity can proceed.

5. A written report based on the review is submitted to DACIM.

6. Following consideration of the report DACIM will prepare its recommendations to the DDPC. The DDPC will make any required decisions, particularly with regard to priorities and resourcing, with respect to the application.

7. The results of the reviews and decisions of the DDPC will be forwarded to the application sponsor(s) and others, as appropriate, for action.

DACIM has established a Data Management Subcommittee to review issues on data management and to develop positions for the consideration of DACIM and the DDPC in this area. It should be noted that Administration Program directorates have the mandate to manage data definitions in their functional areas, as stipulated in the Informatics Policy. SID, and more specifically the Informatics Policy and Planning Division, will coordinate support to this activity by providing a central repository for data definitions in a Data Dictionary, data modelling expertise, and an integrated set of Computer Assisted Software Engineering (CASE) tools.

DACIM has developed, and the DDPC has approved, departmental guidelines for the development of computer-based management information systems. These will be distributed across the department during 1990.

B) Administrative Program.

Review of 1988/89, 1989/90.

In total the Administration Program expended $ 7.2M and 73 person-years in 1988/89 and $ 11.3M and 90 person-years in 1989/90 for informatics-related projects. The increase in person-years and salary is related to the fact that the Sustainable Development and the State of the Environment branches (SD/SOE) are now reporting through CPG.

1. Systems and Informatics Directorate (SID).

The Directorate underwent a complete reorganization in December 1988 to address a number of new responsibilities including the support of the Departmental Office Technology System (DOTS). Within the new organization, more emphasis was placed on technical support, capacity planning, new product evaluation, network management, system planning, application development, and communication of technical information and advice. The following branches were formed: Computer Communication Network Branch to plan, manage, and support the DOTS network; Product Evaluation and Capacity Planning Branch to provide improved capacity planning and evaluation of new products and services for DOTS and other departmental requirements; Applications Development Branch to develop and implement DOTS-related applications. The existing responsibilities for departmental informatics policy, planning and co-ordination were continued and enhanced in the Informatics Planning and Coordination Branch (IPCB).

New processes were put in place by IPCB for the coordination, review and approval of application systems within the Administration Program. The Branch also prepared guidelines for the development of computer applications which were adopted by the Departmental Advisory Committee for Information Management (DACIM) and the DDPC. These guidelines are to be used by all departmental organizations involved in computer system development. The Information Technology and Systems Plan (ITSP) was revised and renamed the Information Management Plan (IMP) to follow new directions and simplified practices promoted by Treasury Board. The Branch initiated Data Management practices within the Program and conducted a pilot in association with the Personnel function to assess the introduction of Computer-Assisted Software Engineering (CASE) software in the Department. Two different products were evaluated: Oracle's CASE and Index Technology's Excelerator. The departmental Informatics Policy was revised to reflect new Treasury Board policies and the introduction of DOTS in DOE. The Branch planned and oversaw the termination of SID's Data General computing equipment. The DG MV10000 and 62 DG terminals were part of a trade-in to acquire new Digital equipment.

The Branch completed a requirements analysis, developed specifications, and issued a tender through SSC for DOTS-compatible personal computers. This tender, a standing offer, resulted in a standard for P.C.s which will be easier to support by DOTS staff and should result in cost savings of $800/unit or $720,000 on 900 units over 3 years.

The Applications Development Branch implemented a new Correspondence Tracking System (CTS) on DOTS early in April 1989. Development continued on the Human Resource Management Information System (HRMIS) application for Personnel with successful integration of PC modules on the NCR DOTS cluster, conversion of roll-up operations from Data General to DEC, and development of the Staffing module.

The Parks Historic Artifacts Collection System data conversions were completed early in 1989 during the phased-implemention for Parks regions. Prototypes of Reader and Editor modules for an Automated Policy System were developed and an NCR field trial is planned. Domestic Substances List: project management was provided and major phases of development are completed for a system to compile and publish the list of chemicals used in Canada. Miscellaneous Oracle applications were converted from Data General and/or implemented on DOTS, then turned-over to ongoing support: Treasury Board Submission Tracking; Minister's Invitation List; Convention on International Trade of Endangered Species; Informatics Hardware Inventory for the Informatics Management Plan, etc... and the two year phase-out for the Data General equipment was concluded on schedule.

The Product Evaluation and Capacity Planning Branch initiated a project to evaluate the use of Wordperfect integrated with All-In-1 as alternative word processing software on DOTS VAX computers. A Workload Analysis Report was produced for the DOTS NCR VAXcluster computers and resource allocation charging algorithms were developed. The Branch provided Chairperson and Secretariat services for the Departmental Advisory Committee on Artificial Intelligence (DACAI).

An Environment Canada Artificial Intelligence Strategy Document was prepared and the Branch managed a consultant-based survey of AI activities in DOE (8 sites, 160 attendees and 80 interviews conducted, 100 potential applications identified).

The DACAI proposals to ISTC's AI R&D fund resulted in $475K in matching funds for DOE projects and major benefits to AES from the Department of Transport $850K allotment for a terminal weather forecast expert system.

Participation in the development of information technology standards at the national and international level was made through:

a) Chairmanship of the Committee on Programming Languages of the Canadian Standards Association.

b) Establishment of the Canadian Special Working Group on Application Portability.

c) Membership on three interdepartmental Information Technology standards committees.

2. Finance Directorate.

In the financial area, Treasury Board agreed to approve new funding for a redesigned a FINCON to meet defined user requirements as well as the Office of the Comptroller General needs. The new system is currently under development with a target implementation of April 1992. Teradata-type technology, which is gaining acceptance and relational data bases will form a major element in the redesigned FINCON system. The Executive Information System (EIS) is emerging as another important management decision tool and linkages to the financial data will be necessary.

3. Departmental Management Services Directorate (DMSD).

The Directorate is sub-divided into three separate units: the Departmental Material and Accommodation Management Branch (MAM), the Information Holdings Management Branch (IHM) and the Consulting and Administrative Practices Branch (CAP).

CAP established a permanant electronic publishing unit to serve the Administration Program. DOTS computers were used to develop the Material-in-use system (MIU), the Departmental Records Automated Management System (DRAMS), the Automated Procurement and Contract System (APACS) and for the conversion of ELIAS.

MAM implemented the Material-In-Use (MIU) system in F&A, and specifications were developed for the Materiel-In-Store (MIS) system. Work has started towards the development of a Publication System (PUBS). The Branch revised, tested and implemented the Security Access System (SAS). Specifications were developed for the Passport System and the Incident Reporting System. These applications all reside on a local area network.

IHM continued the development of DRAMS and initiated the implementation of Module 1 within the Program. ELIAS was converted from a Data General-based Infos system to an Oracle-based system running on DOTS. It was installed at the Departmental Library, at AES Headquarters and at two regional locations. The Departmental DOTS Planning Committee (DDPC) has recognized ELIAS as the Departmental library system.

4. Personnel Directorate.

Development work took place to integrate the Employee, Leave Reporting and the Position Information modules from Sept. 1988 to April 1989. Implementation on DOTS for the Program was completed on June 89 and a micro version was implemented for AES by March 1990. The feasibility Study was done for the Staffing module from February to October 1989 and the development work started in Sept. 1989. The Online Pay module is nov operational in the NCR for all Services and in Cornwall for CPS.

Within Administration Program Personnel, the Human Resources System's modules were implemented. The Employment Equity modules became operational and development of the Official Language module took place as well as development work on the integration of the Staffing & Classification log.

5. Other Program.

The Departmental Correspondence Tracking System was converted to DOTS in mid-1989. In the Corporate Policy Group, a data base was developed to support international meetings. Legal Services' main use of informatics was in accessing and conducting searches on systems from the Justice Department such as Quick Law, Can Law, OPRU, Revelation and Law Lib.

Forecast of 1990/91, 1991/92, 1992/93.

In total, the Administration Program intends to expend $ 11.8M and 95 person-years in 1990/91, $ 12.3M and 95 person-years in 1991/92, and $ 12.8M and 96 person-years in 1992/93 for informatics-related projects.

1. Systems and Informatics Directorate.

IPCB will continue to introduce Data Management concepts and will develop standards in data management. Work will be started to define a Departmental Informatics Architecture. Systems for planning the use of informatics throughout the Department will be linked and integrated where feasible.

The Applications Development Branch will continue development activities for requirements of Corporate Personnel's Human Resource Management Information System (HRMIS) and for Administration Program Personnel. Project Management will be provided to complete the Domestic Substance List (DSL) system implementation. Projects in application development, implementation, and systems enhancements will be undertaken by the Branch for applications such as the Minister's Invitation System, Departmental Communications Planning & Control, National Analysis of Trends in Environmental Emergencies System (NATES), and the implementation of the Environmental Partnership Fund system in the regions. Projects to develop expertise in the use of informatics tools and techniques such as CASE, PCSA, Workstations, DBMS interfaces, and field trials to prove new software will be undertaken and continued in projects such as the Automated Policy System (APS) and the Question & Answer Briefing Notes system. Application software upgrades will be implemented to maintain Administration Program (Minister's Office, Departmental Secretariat, and Personnel) and Canadian Parks Service systems in operation.

The Departmental Computer Communications Network Branch will be increasing the speed of the DOTS network between the 10 major regional nodes. Linkages will be made to the scientific and operational systems across the Department and to other government departments where required. A new smart-card security system will be implemented across the network in 1990/91. A number of new products including Word Perfect, a new spread-sheet package, a local-area network (LanWorks), videotext, computer conferencing, etc will be implemented in 1990/91/92. The major initiative will be increasing the computer/communications capacity to meet the network and applications requirements of the Green Plan.

The Directorate is in the process of implementing a major program across the Department to help support persons with disabilities. The Adapted Computer Technology Program uses computer hardware and software to support the blind, partially-sighted, orthopedically disabled and brain-injured

persons.

2. Finance Directorate.

The new FINCON system will operate from a common PC platform interfacing with an IBM mainframe. There is a growing need to allow the DOTS Digital terminals to interface with the financial system via GATEWAY and pilots are planned to assess the viability of this type of manager access.

3. Departmental Management Services Directorate (DMSD).

CAP will develop high speed print capability to achieve on-demand printing of publications for the NCR. The cost of two units will be approximately $ 90K. The Branch will continue to develop, implement and support administrative applications within DMSD.

In MAM, the use of APACS and of the MIU will be expanded in all regions of CPS. The development and implementation of MIS will take place in all Services. The development of the PUBS will continue with it will eventually be integrated with the MIS system. The present SAS will be expanded and upgraded. Development and implementation of the following security-related applications will be continued: Passport System, Incident Reporting System, ID Card System, Security Violation Reporting and the Key and Combination Control system.

Implementation of ELIAS throughout the Department will be continued. Following the adoption of ELIAS as the Departmental system, IHM will continue discussions with regional management and libraries who are not yet committed to adopt ELIAS, in order to resolve differences and ensure ELIAS's acceptance. The development of DRAMS' remaining Modules should be finished by March 1991, and its implementation throughout the Department completed by March 1993.

4. Personnel Directorate.

The integrated Employee, Leave Reporting and Position Information modules will be implemented for CPS and C&P during fiscal 1990/91. Development of the Staffing module should be completed by April 1990 and implementation will take place throughout fiscal 1990/91. Implementation of Online Pay for the whole Department should be completed by April 1991.

The Personnel Administration Program will complete the development and implementation of the following modules: Inventory of Assignments, Management Inventory, Priorities, and High Potential Women and Francophones. The programming of standard reports will be finalized and Staffing Simplification will be implemented.

5. Other Program.

Elsewhere in the Administration Program, the automation of office functions will be pursued and Information Technology will be used in support of operational activities.

C) Atmospheric Environment Service.

Review of 1988/89, 1989/90.

The Atmospheric Environment Service (AES) has the primary federal government responsibility for providing weather, climate, ice, sea state and air quality services to all Canadians.

As in previous years, the annual information collection process in support of the Departmental ITSP was used to meet Treasury Board and AES objectives in the management and planning of Informatics resources: both Electronic Data Processing (EDP) and Telecommunications (Telecom) resources.

In total, Atmospheric Environment Service expended $ 54.5 M and 374 person-years in 1988/89 and $ 58.6 M and 386 person-years in 1989/90 for informatics-related projects.

Computing and Telecom Services Branch (CTSB) gathers ITSP responses from 26 Branches across Canada. The responses are edited, culled and amalgamated to form the annual AES ITSP submission that is forwarded to the Departmental Systems and Informatics Directorate in Ottawa.

The standard methodology implemented by AES to control Informatics-based projects continues to be actively supported by management. Various committee structures review all projects thereby ensuring both project compliance and approval of Informatics resource usage.

All planned activities for the Centre Informatique de Dorval (CID) 1988/89 have been attended to, and planned objectives have been achieved. The availability of the computing and communications facilities and the level of service being achieved surpasses the level of service requirement. Improvements in hardware reliability and the installation of upgraded system software contributed to minimum unscheduled interruptions of the computer systems. The loss of facsimile weather charts due to hardware and/or software has dropped below three percent. There have been significant achievements in terms of support to users with the installation of new hardware and software equipment.

The Cray and CDC mainframes provided sufficient CPU resources for FY 89/90 with the following upgrades: in conjunction with the MFR upgrade, a second CDC 930-31 was installed on site in May and was not paid for. CID is negotiating with CDC for an ETA replacement. In August 1988 an additional 4.8 Gigabytes of storage was added to each CYBER 930 to handle the more detailed, and accurate weather models.

Considerable effort was expended in optimizing the Regional Finite Element Model (RFE) and the Operational Analyses from which the models are run. The RFE was found to be consistently better than its American competitor NGM.

The installation of a Geostationary Operational Environmental Satellite (GOES) direct read-out station at the Canadian Meteorological Centre (CMC) allowed the development of the algorithms and infrastructure required for data assimilation.

The Operational System Division (OSD) continues to operate and improve support of the National Communications System (NCS). The NCS is designed to move weather information with greater reliability, availability and capacity, and is divided into two components: The National Computer Communications System (NCCS) and the Meteorological Satellite Information System (METSIS).

NCCS is the replacement for the current teletype-based network for the collection and distribution of alphanumeric weather data. Phase "1" was completed in March 1989. This included the fully installed and operational interactive packet switch network on 8 regional computers. The phased cutover to NCCS began October 1988, and was completed in March 1989.

METSIS is the space component of the NCS: a satellite-based distribution network for pictorial weather information across Canada. It disseminates weather information to all Weather Offices on a regular schedule while permitting users to request information as required. METSIS consists of two up-link earth stations located at AES centres in Toronto and Montreal. Weather charts produced at these and other AES Weather Centres are broadcast via satellite to 68 receive-only earth stations across Canada. Each satellite earth station has two high-speed communications channels receiving meteorological data 24 hours per day, seven days a week. These products will be processed and displayed on the Weather Offices' Multipurpose Display Station (MPDS). By March 1989, all METSIS sites were installed, with 12 operational at the Weather Centres for DIFAX. The remainder are awaiting MPDS units.

OSD computing services continued in support of the Canadian Climate Services Program (CCSP). This required an upgrade to the IBM compatible mainframe in support of the Climate Data Management System (CDMS). With the upgrade to the NAS 9060 mainframe, CCSP support problems of over-utilization resulting in slow turnaround were resolved. The contracted upgrades of the mainframe continued, with a CPU upgrade in FY 89/90 and additional of disk storage to support the Climate Database in both years.

The Ice Data Integration and Analysis System (IDIAS) was installed at Ice Centre early 1989 and was accepted in March 1989. The Climatology Ice Data Analysis System (CIDAS) development work started in FY 89/90. The Ice Reconnaissance Data Network (IRDNET) Phase "1" implementation began in mid-1989 and an IDIAS Data Capture Machine (IDCM) was installed at Ice Centre in early 1989. IRDNET/IDCM/IDIAS integration work started in mid 1989.

The Ice Centre Scientific Network, which interconnects all Scientific systems at Ice Centre, was designed and implemented. The Flight Planning Systems (FPS) development started. Radio facilities were upgraded to improve chart reception and transmission from/to ships at sea and Ice reconnaissance aircraft. The Ice Centre was relocated to the LaSalle Academy in Ottawa in March 1989.

Installations of Multipurpose Display Stations (MPDS) began in Feb. 1989 and continued into 89/90. During 88/89 all hardware was tested and installed with emphasis on completing development and acceptance of the custom built Programmable Data Interface (PDI) card and correcting deficiencies in the MPDS application software. All sites were operational by the end of 89/90.
The prototype Radar Data processing System was transferred to the Quebec Meteorological Centre in Montreal for extensive operational testing and evaluation, and the University of McGill will be contracted to provide short-term maintenance and longer-term clean-up and technical support of the prototype unit. An RFP will be issued for the development of a production system of which a significant portion will be for one-time software development.

The National Environmental Satellite, Data and Information Service (NOAA/NESDIS) of the United States operated the GOES meteorological satellite system. The AES receives real-time data directly from two satellites via ground stations at Vancouver and Toronto. The data, in the form of satellite images are distributed to other AES weather centres and are essential in providing reliable forecasts across Canada. The first of the next generation of GOES satellites, which will replace the existing GOES satellites, is scheduled to become operational in early 1990/91. Changes in instrumentation, operational procedures and transmission formats will render AES ground receiving stations and data processing systems obsolete. AES issued contracts for the delivery of system specifications and design and development of the prototype in FY 89/90 in order to permit access to essential weather data from these satellites.

The review for the Regional Scientific EDP Replacement Project (RSERP) operational hardware procurement RFP was completed in July 89, and the project deferred to 90/91 because of lack of O&M. The productivity of AES' many weather forecasters will be increased with the introduction of a workstation environment which will coordinate new aids arriving from the RSERP, Radar and other projects.

Optimization of the Climate Data Management System (CDMS) software was completed in May 1988. Phase "2" of this system to process Canada-wide observed weather data was implemented in October 1989 by AES within existing budgets. Implementation of the CDMS software for data processing and quality control was delayed in order to optimize the software for use with a large database. The contractor-produced design for CDMS did not take into accounts some software restrictions related to large data volumes, so it was necessary to make major changes to large portions of the CDMS software. Other climate-related activities will include improvements in AES' climate publications.

Testing of the contractor-supplied Climate Information Centre (CIC) software revealed a very user-UNfriendly system with some significant software errors. Based on these findings a decision was taken to postpone implementation of CIC.

Many acquisitions are in support of specialized regional services across Canada. AES' participation in the National Hydrology Research Institute at

Saskatoon will be increased with the acquisition of a DEC MicroVax minicomputer and peripherals compatible with other provincially-supported informatics equipment.

AES support of Saskatchevan climatology was improved with the acquisition of a Data General computer to upgrade the Elbow weather radar's analysis processing to provide much-needed image analysis and rainfall estimation.

As per plan AES has added two HP 9000 minicomputers and peripherals to the Marine desks at both the Halifax and Newfoundland Weather Centres. These two minicomputers are used in the development of forecasts specific to the needs of fisherman.

The Quebec weather centre in Montreal have acquired and installed a graphics workstation compatible with the equipment used by the CMC in nearby Dorval. This RSERP development workstation (HP 9000 model 300) will operate CMC-developed software and allow the forecaster access to graphical products in order to enhance Quebec forecast centre operations.

A replacement for the Pacific Weather Centre (PWC) GOES receive facility was funded in 88/89. The backhaul satellite link between the PWC and Toronto to distribute images from the receive facility via METSIS became operational in May 89.

The Concurrent based High Resolution Picture Transmission (HRPT) system was installed in Edmonton. The HRPT receives imagery of Western Canada and the high Arctic from the TIROS polar orbiting satellites. A reconditioned HP 1000 computer was installed to support the forecast requirements of the 1988 Winter Olympics.

A DOTS (Departmental Office Technology System) user requirement study was initiated in December 1987. This study recommended that AES implement the DOE DOTS with distributed minicomputers that are accessed by AES' many 286-based PCs. These PCs will do word-processing locally using software that is compatible with both the MS-DOS and the DOTS environments; thereby removing much of the overhead from any office technology system. Phase "1" of DOTS is well underway: all the designated users have received their equipment. In addition the Executive Information System (EIS), which is the DOTS network pilot application, is on schedule. Phase "2" of the DOTS/EIS expansion is on schedule: Central and Pacific Regions were added to the network by Oct-Nov/89. The remaining regions will be on-line by first quarter of fiscal 90/91.

The new DOTS applications are fully operational micro versions of the Leave Reporting System (LRS), and the Environment Position Information Collection System (EPICS). The VAX ORACLE 5 version of LRS is operational, and development of the VAX ORACLE 5 EPICS prototype has begun.

The acquisition of microcomputers are approved on an individual basis by the Computing and Telecommunications Services Branch in Downsview to ensure that they meet overall DOE and AES procurement policies. Over the last five years, this has proven to be very successful, in maintaining a high degree of compatibility across AES' microcomputers.

Forecast of 1990/91, 1991/92, 1992/93.

The Service intends to expend $ 64.1 M and 398 person-years in 1990/91, $ 67.3 M and 398 person-years in 1991/92 and $ 70.6 M and 398 person-years in 1992/93.

AES Information Technology Strategies and Goals

In the AES Strategic Plan, the four Program Areas indicated common key thrusts listed below. (It is significant that all elements are based on expanded and enhanced computing and telecommunications facilities as the infrastructure).

- Provide a fully-integrated and extensively-automated data-gathering network to monitor weather changes.
- Provide more efficient and timely dissemination of information to users, including more effective information access.
- Provide improved data analysis and data modeling capabilities for all AES programs.
- Provide integrated data archives capable of being accessed by any user at any time.
- Maintain good international relations, collaborate and cooperate through items such as data exchange, processing global models and distributing information through inter-satellite communications links.
- Develop an organization where more staff members will be highly trained in computer science to develop, support and maintain computer and telecommunications systems.
- Provide integrated office automation across the service with capabilities to access most operational files, archives and processing facilities.

Future Activities

There are various projects which are currently in progress. For instance, the Regional Scientific Equipment Replacement Project (RSERP) has been planned to replace obsolete regional HP minicomputers at the weather centres and will be completed in 1991. The Multipurpose Display Station (MPDS) was developed to provide graphical display of a variety of products (facsimile and satellite imagery).

AES plans to replace the present Cray X-MP supercomputer and a procurement study has been started in summer 1989. The new supercomputer facility should be installed by April 91 and become fully operational by June 92.

AES has several new opportunities to explore during the next five years.

a) To define the unified software and database standards required for nationwide multi-user, multi-processor, multi-tasking database. In addition, develop the software tools required to construct and maintain such a distributed network.

b) To develop a plan to upgrade the existing supercomputer facility and its infrastucture to provide improved data analysis and data modeling capabilities for all AES programs.

c) To develop the expertise in the use of expert systems to supply AES's long-range atmospheric information processing requirements.

d) To provide integrated data archives capable of being accessed by any user any time, anywhere. To achieve this, we must review and introduce new storage technologies, (where applicable), to reduce support costs and improve performance.

e) Regional Weather Centres use the supercomputer only to a limited extent. This is in part, due to the historical lack of telecommunications to return graphics and model output to the user. Therefore, AES will utilize the satellite communications network to distribute supercomputer products to both AES and non-AES users.

f) Maintain a continual awareness of the most appropriate and cost effective network to accommodate collection, inter-centre communications, and product dissemination.

g) Realizing the future of Office Automation, AES in conjunction with other services are standardizing their requirements and implementing systems that will be consistent with the Departmental Office Technology System (DOTS).

h) Effectively use the NCS (National Communications System) for two years before embarking on any major enhancements.

i) To minimize costs, prepare a study that investigates the feasibility of contracting out the operations of the AES telecommunications facilities. In addition, look at the purchase/lease options available.

k) Due to advances in office automation and expert systems, continue to provide re-training of our existing staff base to meet the changing requirements.

AES New Information Technology Investments for 1990/91.

Scientific Computational Facility Replacement Project (WS CMS)

AES is proposing to replace it supercomputer facility in Dorval, Quebec. Greater supercomputer processing power is required to improve the accuracy of forecasting temperature, precipitation and wind, to provide regional high resolution forecast guidance for severe weather forecasting, to continue testing climate computer models to forecast climate change, to develop monthly and seasonal Climate forecasts, to improve Acid Rain modeling, to forecast trajectories and depositions of radioactive and toxic substances resulting from environmental catastrophes and to implement the developing ocean current and iceberg drift models into operational ice forecasting to achieve realistic results.

Interactive Weather Presentation Station Project (WS REG)

The purpose of this project is to effect productivity improvements and enhance the reliability of the overall meteorological presentation system by upgrading 80 workstations, by adding up to 40 new workstations, by acquiring backup tape and power supply units and by upgrading the display software.

Weather Services Office Implementation - EDP & Telecommunications Support (WS REG)

AES' strategic direction is to distribute meteorologists to more locations and to expand their consulting and information service roles. This results in Weather Service Offices, which are offices that combine forecast production with consulting and information services. In order to implement this strategy, increased computing and communications support is required.

CIDAS (Climate Ice Data Archiving System) Project (CCC DS)

The objective is to provide an ice data archive that is compatible with the new digital analysis methods. It will handle increased data from Ice Centre in digital format and catalogue archived products and messages and provide a digital archive of alpha-numeric and graphic products.

D) Conservation and Protection.

Reviev of 1988/89, 1989/90.

For fiscal-year 1988/89, Conservation and Protection was divided in the following organizational components: Management and Administration Support, Canadian Wildlife Service, Environmental Protection, and Inland Waters. In 1989/90, the Service commenced reporting against the Program Activity Structure which is divided as follows: Management and Administration Support, Natural Resource Conservation, Environmental Quality Protection, and Environment Ecomomy Management.

In total, Conservation and Protection has expended $ 16.7M and 95 person-years in 1988/89; and $ 16.8M and 80 person-years on informatics-related projects in 1989/90. The decrease in person-years is related to the transfer of SD/SOE to CPG.

DOTS Report.

Several significant DOTS acquisitions occurred to expand the DOTS network within C&P both at the NCR and in the regions. This is specifically Phase 4 of the DOTS implementation plan which includes the expansion of the Network to District offices.

Quebec Region.

In Quebec city, the existing processor was upgraded at a cost of $250K. The support of office automation and the addition of several ORACLE applications justified replacing the exising MicroVax II to the 3000 Series of microcomputer. APACS (Automated Procurement and Contracts System), CPAIS (Conservation and Protection Automated Inventory System), ELIAS (Library System) and DRAMS (Departmental Records Automated Management System) was added to the system during the 1989/90 fiscal year. Implementation of the AFMAS (Automated Financial Management and Accounting System) and On-Line Pay communications links through the DOTS system also occurred.

In Montreal, plans were made for the acquisition of a 6000 series minicomputer for DOTS and operational uses. This acquisition was covered under a separate Treasury Board submission as the cost exceeded $ 1 M.

Ontario Region.

In Toronto, the MicroVax II was replaced with a Vax 3900. The nev processor serves a user community of 60 users and supports the applications outlined in the narrative for Quebec City.

All other Regions.

No specific acquisitions were made for the other Regions during the 1989/90 fiscal year.

NCR

Directorates at NCR added users to the central DOTS System presently at InfoPlace. The Centre upgraded the existing hardware at InfoPlace to meet increased demands imposed by the new users (estimated at 50). The implementation on a full scale the Departmental and Service applications as APACS, CPAIS, DRAMS, etc. occurred. The cost of the upgrade both for microcomputers and terminal access to the system was around $ 300K.

Institutes.

An internal network of existing scientific and management microcomputers for the Wastewater Technology Centre was implemented. The study determined the most cost efficient method to connect the Centre into the DOTS network while linking existing equipment into the network.

Operational Systems.

Canadian Wildlife Service

The Environmental Information Systems Division replaced several obsolete mini-computers (used for communications to the Service Bureau, data entry, program development and general computing activities). As well there is a requirement to be compatible for communications and processing with the DOTS standard system. The Data General MV8 was replaced by DOTS processors to continue the support of ORACLE applications and of systems which were running at the EMR Centre.

Environmental Protection Directorate

- National Environmental Emergency Centre

A study was done to review and recommend the creation of a National Environmental Emergency Network within C&P. The consultants report formed the basis for the implementation of systems and hardware acquisitions for all Environmental Emergency Offices nationally. It was expected that no individual hardware acquisition would exceed $100K and that the total would be around $250K. The objective of the Environmental Emergency Network is to provide immediate response and dissemination of information regarding environmental emergencies nationally. The total system is composed of several microcomputers located in all offices for the transmission of data and text and the receipt of data and text in various formats including Geographic Information System information. This system includes the operation of GIS systems as SPANS and CAMEO II which are currently used both within the Department and in other agencies and governments.

Inland Waters Directorate.

With the announcement of the closure of the EMR Computing Centre, a requirement nov existed to shift existing computer processing and databases from the EMR Centre to another facility. A consultant was hired in the last quarter of 1988/89 to assess the feasibility of processing the information internally and to assess the hardware requirements to provide computer processing and database access to the Directorate. Proposals were made to acquire a minicomputer (estimated $700K) in the 6000 series of Digital equipment to meet the identified needs of the Directorate. The plan included the conversion of the NAQUADAT Database from the existing System 2000 Software to the Departmental ORACLE standard and to migrate this database from the EMR Computing Centre to the internal VAX by the fall of 1989. Included in the plan was the Water Resources Branch HYDAT database. The funding of this acquisition was done through the Department of Supply and Services acquisition fund with a yearly payback to SSC.

The National Water Quality Laboratory used a VAX 750 as the laboratory computer in order to store, process retrieve and interpret Quality Control data. With the implementation of a Quality Control Database System on the computer, it has been determined that the existing hardware would require upgrade to ensure efficient processing of vital laboratory analyses. A Vax 3800 processor was acquired this fiscal year to support the addition of the new applications.

Western and Northern Region.

A MicroVax II from CPS in 1989/90 was transferred to the Yellowknife District.

Other Regions.

No major acquisition vere made.

Institutes.

At the National Water Research Institute (NWRI), ORACLE was acquired to support scientific applications on the CYBER and DOTS applications. The conversion from NOS to NOS/VE operating system was completed. At the Wastewater Technology Centre, a LAN for the scientific data computers (HP) and scientists workstations was installed. Acquisition of microcomputer workstations continued for the scientific staff.

Forecast of 1990/91, 1991/92, 1992/93.

In total Conservation and Protection intends to spend $ 17.5M and 81 person-years in 1990/91, $ 18.3M and 82 person-years in 1991/92 and $ 19.0M and 83 person-years in 1992/93 for informatics-related projects.

DOTS Plan.

No significant acquisitions will occur with respect to the DOTS System. The major initiatives within C&P will be the integration of the existing IWD nodes into the DOTS environment through the use of the same software (All-in-One). The only planned acquisitions are to upgrade and restructure present hardware configurations. The connection of microcomputers to the DOTS and IWD systems (via PCSA and terminal emulation) will continue through this fiscal year. The purchase of several laptop microcomputers will be made during the fiscal year to provide traveling employees with the ability to access DOTS remotely.

Quebec Region.

The existing VAX 3400 will be upgraded to a VAX 3800. This is estimated at $ 174K. This upgrade is required to ensure effective operation of existing and planned applications whose volumes and sizes have now been evaluated. The number of users will raised from 45 to 60. A total of 20 microcomputers will be purchased for DOTS and scientific use for a total of $ 110K.

The 6310 has been acquired and its memory will be upgraded to 32MB at an estimated cost of $ 40K. The planned upgrade to a 6320 has now been postponed to the 1991/92 fiscal year pending verification of the CPU requirements. Connection of various microcomputers to the system via PCSA and terminal emulations will occur as planned. This will require the purchase of approximately 30 microcomputers for an estimated cost of $ 180K.

Ontario Region

The old MicroVax II from Toronto will be used in the Guelph District office for the Water Resources Branch. The processor will serve a user community of 15 users as well as providing a base for the APACS and CPAIS Systems. The purchase of microcomputers to connect to the DOTS system will continue this fiscal year with approximately 8 microcomputers for $ 75K.

Pacific and Yukon Region

Because of the co-location of offices in one building within North Vancouver and the fact that the current processors have reached saturation, a reevaluation of the processing capacity will be completed at the time of the move. Original estimates indicate that at least one additional processor is required in the 3000 or 4000 series at an estimated cost of $ 250K to effectively replace the MicroVax II in Inland Waters. 12 microcomputers will be purchased for DOTS and scientific uses which will be connected to DOTS for an estimated $127.0K.

Other Regions.

The remaining C&P Regions have no specific plans regarding the upgrade or replacement of DOTS equipment. Access to microcomputers for both scientific and administrative needs will be expanded. Evaluation of processors capacity in several locations are underway, however no specific plans for upgrades or replacement have been made for the 1990/91 fiscal year.

NCR.

Replacement of terminals with microcomputers in high usage areas will continue. The number has been estimated at 19 microcomputers for management and support functions at a cost of $ 152K. A study is underway for the implementation of PCSA within the Service. This may affect the number of users on the cluster that require full processing capabilities. PCSA within the Service will be mostly for operational needs as opposed to administrative, but a link to DOTS will be provided.

Institutes.

A review of the NHRI (National Hydrology Research Institute) computer requirements is planned and will address both DOTS and operational requirements. This review will not consider the acquisition of equipment until the 1991/92 fiscal year. The implementation of scientific and administration applications may require the purchase of a small processor for ORACLE in NWRI, however an alternative plan has not been completed.

Operational Systems.

Canadian Wildlife Service

Because of the reorganization of the Department, plans to move the CITIES Database from DOTS to the MicroVax 3400 purchased in 1989/90 will not occur. The acquisition of microcomputers for workstation and laptop (field) work will continue. These workstations will be used for scientific projects and to access DOTS. An estimated 23 microcomputers at a cost of $ 170K will be acquired during in 1990/91.

Environmental Protection Directorate.

All Branches.

Acquisitions of microcomputer workstations as well as laptop will continue. LAN implementation will be reviewed in the Directorate, including electronic publishing. An estimated 45 microcomputers will be purchased at a cost of $ 288K for scientific projects as well as access to DOTS. Implementation of LAN technology is projected for the Waste Management Branch as well as the Management and Assessment Branch. The total cost of the LAN implementations is $ 125K.

Inland Waters Directorate.

Following the acquisition of the new 6410 in 1989/90 and its installation during the first quarter of 1990\91, most scientific activities will be in the conversion of existing databases. The acquisition of microcomputer workstations to be integrated into the existing PCSA LAN will continue. It is estimated that 32 microcomputer including workstation and laptops will be purchased during 1990/91 for an estimated cost of $ 215K. The workstations although acquired to meet scientific requirements will provide access to DOTS.

The National Water Quality Laborabory will use the MicroVax 3800 purchased during 1989/90.

National Environmental Emergency Centre.

The Environmental Emergency Area was transferred to Inland Waters Directorate effective April 1990. The study for the creation of a National Environmental Emergency Network was completed during 1989/90. As the study only addressed the reporting of spills to the National Environmental Emergency Centre, an additional long term planning review will be conducted in 1990/91. The objectives of this study are to define the needs for the Environmental Emergency Reporting and Action area in light of the Environmental Agenda direction. Expansion of the network to the Regions and Districts will continue during the fiscal year. The requirement for the use of CAMEO II on a MACIntosh platform will be addressed. It is estimated that an additional 15 microcomputers at an estimated cost of $ 190K will be required to meet the NCR, Regional and District Offices requirements and provide portable workstations to spill sites.

Atlantic Region.

No major purchase is planned for this 1990/91 fiscal year. The transfer of a MicroVax II from CPS to Inland Waters has solved the current scientific computing requirements. The acquisition of microcomputer workstations and laptops will continue. An estimated 22 microcomputers will be purchased in the Region for scientific needs for approximately $ 125K.

Quebec Region.

The acquisition of microcomputer workstations will continue in the Region. In addition to those acquired for DOTS, 30 microcomputers will be required for the Region at an estimated cost of $ 190K. These microcomputers required for scientific projects will also provide end-users with access to DOTS.

Ontario Region.

Acquisitions of laptop microcomputers for field staff will be one of the main effort as well as the continued replacement of obsolete microcomputers for scientific projets. Around 34 microcomputers will be purchased at an estimated cost $ 276K, of which 12 will be used for field projects.

Western and Northern Region.

Implementation of PCSA LAN Technology in all offices will be done.

Pacific and Yukon Region.

With the co-location of the Regional Offices previously mentioned under DOTS, no additional plans for upgrading of systems exist until completion of the relocation and the installation of a processor to support DOTS. Continue acquisition of microcomputers for specific projects will occur during 1990/91. 11 microcomputers will be purchased, in addition to those noted under the DOTS acquisitions, for an estimated $82.0K.

Institute.

National Water Research Institute (NWRI)

No major acquisitions are planned. Planning will commence in order to replace the CYBER computer in 1992/93. The acquisition of microcomputer workstations for scientific needs will continue with 33 microcomputers for workstations and field work at an estimated cost of $ 204K.

National Hydrology Research Institute (NHRI)

Planning has started to address the operational computing requirements in conjunction with the DOTS replacement. 20 microcomputers will be acquired at an estimated cost of $ 185K.

Wastewater Technology Centre

No major acquisitions planned. Acquisition of microcomputer workstations for professionals will continue.

River Road Environment Centre

No major acquisitions planned. Implementation of an Electronic Publishing System will occur in the second quarter of 1990/91 after the release of the C&P policy on Electronic Publishing Workstations. Acquisition of microcomputers for scientific workstations will continue.

E) Canadian Parks Service.

Review of 1988/89, 1989/1990.

The objective of the Canadian Parks Service is to protect those places which are significant examples of Canada's natural and cultural heritage for the benefit, understanding and enjoyment of the people of Canada, in ways which leave that heritage unimpaired for future generations.

Canadian Parks Service manages 34 national parks, 1 marine park and 112 national historic sites, including 8 historic canals, 5 heritage rivers and 2 cooperative heritage areas. These are highly decentralized with more than 70 Responsibility Centres organized within 5 Regions located in every province and territory.

The Parks Program consists of three Activities:

- Park Operation;
- Park Development;
- Program Management and Technical Services.

Information systems support various aspects of the Program across these three Activities. Because of the breadth and depth of the Parks informatics needs, long-term strategic planning is essential in order to enable a sharing of information while ensuring adequate support in a cost effective manner.

In total, the Canadian Parks Service expended $ 18.2 M and 55 person-years in 1988/89 and $ 17.1 M and 57 person-years in 1989/90 for informatics-related activities.

National Parks.

Protection

Law Enforcement Operations: Timely access to up-to-date information (eg. concerning poachers) by law enforcement specialists assists park wardens to do their job more effectively. CPS was granted approval for direct access to the RCMP Police Information System (CPICS) in November 1989, becoming the first non-police agency to have direct access.

Occurrence Tracking: It is necessary to identify, record, and track operational occurrences such as incidents under law enforcement, health and safety or the use of pesticides within each park. In 1989/90, a concept proposal was developed.

Fire Information System: This system automates the calculation of fire indices which estimate the probability of potential fire hazards. This will improve the fire forecasting and reporting process, and enable early preparation for potential fires. Automated collection of weather data is also being considered at a number of parks. In the longer term, the system will be enhanced by integrating it into the mapping function of the Geographic Information System (GIS) for the parks. In 1989/90, the system was installed in six locations.

Conservation

Geographic Information System (GIS): This mapping system provides decision support for natural resource management and parks system planning. It assists park wardens in assessing the impact of a variety of issues or plans for change. It is expected that eventually there will be a GIS capability in each park. By the end of 1989/90, there were 19 GIS systems operating in the regional offices and national parks.

Environmental Assessment (EARP) Expert System: This system will provide the capability of screening project proposals (eg. a new road) to assess the impact on the environment in the park. Consistent, timely assessments as well as registration and tracking of these assessments are important.

In 1989/90, a contract was awarded for the modification of the Transport Canada system.

National Historic Sites.

Collections Management of artifacts includes the collection and inventory of historic objects and reproductions. There are approximately 150,000 catalogued items, and some 300,000 uncatalogued specimens and objects located in parks, sites, other locations as well as in warehouses.

Archaeological specimens constitute another major inventory of artifacts maintained at head office, regional offices, and some historic sites. Approximately 100,000 unique specimens have been catalogued and stored in appropriate temperature and humidity controlled warehouses.

Periodically, objects and artifacts require professional rehabilitation and they are sent to the conservation laboratories for maintenance and rebuilding.

Artifact Information System (AIS) is an on-line information system using MODEL 204 on an IBM mainframe to assist in the control and distribution of the historic objects. The system is processed on a DOE machine at Atmospheric Environment Service's installation in Downsview, Ontario.

In 1989/90, communications to the mainframe were enhanced by using the DOTS network.

A prototype of park/site level inventory management of historic objects (HOIST) was developed in 1989-90 for operation on DOTS equipment at Lower Fort Garry.

DOSSIER, Archaeology's system, which was implemented in 1987, was reviewed in 1989 by its user group and modifications were identified to improve its operation.

Program Management Directorate.

Realty 1990 Rent Review System: The leases for properties located within the Park are reviewed at ten year intervals. This system will assist in tracking the rent review process; and assist Realty Officers with the identification of the lessee and details of the lease. In the longer term, the system will be expanded into a property management system.

In 1989/90, the system was installed in Western and Prairie regions. A proposal was submitted to expand the functionalities of the system as well as locations that it operates. This proposal has been evaluated and priorized. Its implementation this fiscal year will depend on the availability of funds.

Park Use Related Data System (PURDS): This system collects, stores and provides reports on visitor statistics and park use information. This facilitates the analysis of the use made at each park/site, thereby supporting marketing, operational performance, capital acquisition as well as measurement of impacts, etc.

In 1989/90, the operational data model was refined and regular reporting processes incorporated. In addition, work was begun on a concept for data definition standardization.

Automated Kiosk: This system is associated with the PURDS system. The concept is to record visitor information automatically at kiosks at the time of park registration. Subsequent changes, such as extension of stay or additional services required, can then be made very quickly. It is expected that significant savings will be realized from automation of the registration and subsequent analysis and data roll-up. In addition, survey questions can be included at the time of registration so that data collection for specific surveys can be captured at almost no extra cost.

During 1989/90, the automated kiosk system was partially tested at three locations. The results were inconclusive due to systems and operating difficulties. To streamline the processing, and provide a uniform set of program modules at all locations, major portions of the system were re-written.

Parks Development.

The objective of the Park Development Activity is to identify and acquire, or otherwise extend protection to, places which are nationally significant examples of natural and cultural heritage; to develop heritage areas and create appropriate opportunities for the public to experience them.

The Park Development Activity is concerned with the establishment and development of new parks and facilities; and with completing or enhancing existing parks or heritage areas. Sub-Activities include: Policy, Research and Planning; and Acquisition, Conservation, and Development of Heritage Places.

There are no major systems to support Park Development. Most of the activity relates to one-time studies; however, there is information being gathered within the National Historic Sites Planning System to support the planning and analysis of this activity. In addition, a number of informatics tools, such as the Geographic Information System, support individual tasks.

Parks Management and Technical service.

The objective of Program Management and Technical Services is to provide management direction, technical and support services to the Program. This Activity encompasses directing and managing the Program and providing financial, administrative and personnel services at the regional and headquarters level. A variety of specialized and technical services in regions and at headquarters, such as socio-economic analysis, operational analysis, engineering and architecture, are included in this Activity.

Departmental Office Technology System (DOTS)

CPS implementation of the Departmental Office Technology System (DOTS) and the development of the associated network began in 1987. The approved four year implementation plan was completed in 1989/90, on schedule. To date, 80 locations, including 42 mini-computers, have been installed. In addition, major upgrades were carried out in 1989-90 at 8 locations, and minor upgrades were carried out at most of the other locations. Approximately 1200 CPS workstations across Canada are connected to this network, with about 2300 office technology users having been trained in All-In-One, word processing and spreadsheet use.

A CPS communications network has been established, which combines the networks previously separate in the Program: the DOTS network, AFMAS (DSS financial system) network and ENVOY 100. This network is now managed centrally, and will result in significant operational cost reductions in future years.

One of the main objectives of the DOTS network in Parks is to provide a cost-effective framework for informatics applications in Parks' diverse operational environment.

In 1989/90, the Realty Management System became operational; 2 modules of the Human Resources Managment Information System (HRMIS) were implemented in several regional offices; the departmental library system (ELIAS) was installed at 4 significant libraries; and the departmental records system, for tracking correspondence, was installed at PHQ. In addition, the DOTS network is being used by the Park Fire System to transmit reports, and On-Line Pay for direct entry into DSS pay.

Office of the Comptroller.

Access to Financial Information

Teradata: The departmental financial system (AFMAS) provides for budgeting, controlling, and reporting financial information at fifty-six financial accounting offices. To assist in improved access and analysis of financial information, CPS is implementing Teradata, also offered through Supply and Services. In 1989/90, Teradata was implemented in all regional offices and one park.

Common Departmental Financial System (CDFS): The Government's current financial information systems are approximately 20 years old. In mid-1989 the Office of the Comptroller General received approval to proceed, in conjunction with DSS, with a 10 year plan to upgrade government financial and administrative systems.

Cost Accounting and the Management Information Framework (MIF)

Cost Accounting Interface System (CAIS): for all field maintenance expenditures was operational in all major field locations in CPS. It was extended to all other field functions using the MIF information structure based on products and services in the field. This provides standard financial cost data to assist with planning, justifying and allocating resources, fee setting and cost/benefit analysis. Operational or performance data will be provided through other components of the MIF project at a later date. In 1989/90, the extension of CAIS to all field functions was installed.

Materiel Management

CPS manages a diversity of materiel attractive items (i.e. office furniture including computers and related equipment; machinery; snow blowers; lawn-mowers; powertools; etc.) valued at $111.3 million. The annual replacement requirement is estimated to be $14.4 million. It is important to have integrated work tools to assist in the management of the procurement, payment for, and inventory of these assets. Automated systems utilizing single entry data capture are being developed for this purpose.

Materiel In Use (MIU) is a new inventory system developed by DOE Corporate. All Services are looking to replace individual, older, currently ineffective systems (eg. CPS's Automated Distribution Accounting System (ADAS). In 1989/90, CPS began testing the new MIU system.

Automated Procurement and Contracting System (APACS) automates the procurement process for both contracts and requisitions administered by Materiel Management and Contract Services, by electronically generating and processing requisitions and orders. It has been developed by DOE and will be interfaced with the inventory system (MIU). It is also planned to interface it with DSS's PASS (Procurement and Acquisition Support System) and FINCON (Financial Control) systems to develop a comprehensive, automated process covering requisition, acquisition, financial commitment and payment, plus inventory. In 1989/90, CPS began testing the system.

Resource Planning

Program Resource Planning System will support resourcing, execution, monitoring and measured achievement of the planned program. It will replace the Milestone Information System that is currently operating at a Service Bureau and microcomputers at regional offices. More timely information on capital and the operating program will then be available to managers and functional specialists at the park, region and HQ levels. In-depth analysis of the data will be more readily achieved in less time than is now possible. User Requirements were defined 3 years ago but the project has been delayed due to insufficient resources.

Personnel.

Human Resource Management Information System is a modular system which will automate many of the personnel functions. Managers will be provided with timelier employee and position information. The different personnel processes will be accelerated through the elimination of time delays and reduced paperwork.

In 1989/90, the Position, Employee and Leave modules were installed in the headquarters and 2 regional offices (PNRO and QRO).

On-Line Pay is now operational in the NCR and 4 regional offices. The system was installed in several parks in 1989/90.

The Staffing module, developed in 1989/90, is currently being tested by DOE Corporate Personnel as a pilot project.

Architectural and Engineering Services.

Asset Management Process (AMP) is a method for managing CPS fixed assets throughout their complete life cycle by encompassing daily maintenance (minor maintenance) and recapitalization (major maintenance) requirements in one management tool. Potential impact of the completed process is substantial; the replacement value of the Parks Service real property assets (excluding lands) is estimated at $4.3 billion. The 1989/90 annual maintenance budget was $65 million and the annual recapitalization budget was approximately $60 million.

Energy Management System This system provides information on energy (electricity, oil, gas) consumption for each asset. It provides rates of energy use per square metre of building area and identifies high energy users, for improved maintenance or recapitalization expenditures.

Forecast of 1990/91, 1991/1992, 1992/93.

In total, Canadian Parks Service plans to expend $ 17.2M and 59 person-years in 1990/91, $ 18.1M and 61 person-years in 1991/92, and $ 18.3M and 62 person-years in 1992/93 for informatics-related activities.

Informatics Strategic Planning.

A major effort in CPS informatics is the development of an informatics strategic or long range plan to define the information needs and the data, systems plus hardware and software architectures to support CPS business needs.

The methodology being used is first to define the business needs and then to identify the applications and technological architecture to support them. To do this, the study of business needs is partitioned into three segments: data processing, text processing and image processing.

(i) The data processing segment covers systems and applications (by function) together with their linkages. We expect to complete more than 50% of the functions (representing more than 75% of the systems) this fiscal year, and to complete the remainder in fiscal year 1991/92. When identification of the needs of each function is finalized, a technical architecture will be identified for each application/system.

The results will be documentation on the systems required for the next 3-5 years and the overview of the technical design, including the linkages to other applications. This will provide a framework for users as to how identified systems and processes will fit together. It will also provide a focus for all future development.

(ii) The text processing segment covers office automation general purpose tools and the technical solutions to support those needs. We expect to have the needs identified and technical solutions proposed by October.

(iii) The image processing segment covers the storage of pictorial data on magnetic or optical media for their subsequent updating and retrieval. By the end of June we expect to identify the architectures/technical solutions for those groupings which are planned for immediate implementation.

Following the establishment of business needs, we should have the base information needed to establish the communications architecture, and to design the data/ information architecture. These would be started after the first three segments are completed.

Corporate (SID) is currently drawing up the basic mission, objectives and principles for the departmental informatics strategy. We will then tailor the departmental model in a way that addresses Parks' specific environment while ensuring the fit to Parks' business strategy which is also being currently developed.

Finally, we will draft a document that brings together the mission, objectives and principles together with the needs in order to propose, for management approval, an integrated informatics strategy, including an action/implementation plan. With the current resourcing, this should be completed in the fall of 1992. Since the parts of the plan will be made available as they are completed, they should provide a framework to users and a focus for developers in the interim.

We believe the benefits of having an informatics strategy/long range plan to guide all levels of the organization will make our efforts worthwhile.

Information Systems and Technology Support.

Operational requirements require that development continue. Many of the systems are in the early stages of concept and definition or the late stages of implementation. The development of information systems is described within the context of the three Activities of the Parks Program: Park Operation; Park Development; and Program Management and Services.

Parks Operation.

The objective of Park Operation is to protect for all time, natural and cultural heritage resources in the Parks Program system; and to encourage the public understanding, appreciation and enjoyment of these resources. Sub-Activities include responsibilities for: Resource Protection and Management; Information, Interpretation and Visitor Services; Maintenance of Park Facilities; Park Supervision; Banff and Jasper Townsites; and the National Battlefields Commission.

National Parks.

Protection

Law Enforcement Operations: During 1990/91, CPS computer linkages to this system will be implemented at PHQ, the five regional offices and three parks. It is anticipated that over the next three years (1990-93), up to 21 parks will be connected to CPICS.

Occurrence Tracking: A prototype will be developed and evaluated in 1990-91.

Fire Information System: It is planned that the system will be installed in another thirteen locations in 1990/91, completing this phase.

Conservation

Geographic Information System (GIS): 1990/91 will see further expansion with the addition of another 8 GIS units, as determined by regional priorities.

Environmental Assessment (EARP) Expert System: Once the modification is completed in 1990/91, the system will be offered to individual parks.

National Historic Sites.

Artifact Information System (AIS): During 1990, the HOIST prototype will be piloted at several other historic sites to determine the national requirements for a site level inventory management system. Several regions have already indicated growing needs for such a facility.

DOSSIER In 1990-91, documentation will be improved, the modifications will be implemented and back-up techniques will be improved.

Program Management Directorate.

Park Use Related Data System (PURDS): For 1990/91, development work will conclude. The data model, data capture, conversion, storage, communication, statistical processes, and reporting modules will have been linked and tested.

Automated Kiosk: In 1990/91, Automated Kiosk in its developmental mode will be operated in the Atlantic Region during the park season at three national parks and one historic site. Evaluation and cost-benefit analysis, as well as the informatics strategy for visitor activities, will facilitate decisions to be made on programming and implementing an operational system.

Departmental Office Technology System (DOTS)

In 1990/91, MIU and APACS are to be piloted; after user acceptance, MIU will be implemented in 40 locations and APACS in 6 locations. In addition, implementation of the two modules of HRMIS and On-Line Pay in 40 locations should be completed. Implementation of a number of smaller regional and field applications is also planned.

A capacity plan was prepared for 90/91 to determine the DOTS information processing resources needed. The plan calls for significant upgrades to the DOTS system at Quebec Regional Office, Banff, Jasper, Rideau, Bruce Peninsula and the NCR, all of which have outgrown current capacity. In addition, minor upgrades to most of the other CPS field office locations is planned.

Office of the Comptroller.

Access to Financial Information

Teradata: In 1990/91, access will be made available to most parks. The standard reports will also be improved.

In addition, CPS will identify a methodology for providing managers with access to basic financial and human resource information through the DOTS network.

Common Departmental Financial System (CDFS): DOE has decided to use the DSS operated Common Departmental Financial System (CDFS) which will incorporate the functionality of the current DSS Departmental Reporting System (DRS), AFMAS and TERADATA. We expect CDFS to be operational in 1994/95; we could see a pilot operating in some areas as early as 1992/93.

Cost Accounting and the Management Information Framevork (MIF)

Cost Accounting Interface System (CAIS): In 1990/91, the system will be modified to address the post-implementation review findings.

Materiel Management

Materiel In Use (MIU): In 1990/91, following user acceptance, the system is planned to be implemented on DOTS at 40 locations where material managers are situated.

Automated Procurement and Contracting System (APACS): In 1990/91, following user acceptance, the system is planned to be implemented on DOTS at Parks Headquarters and five regional offices.

Resource Planning

Program Resource Planning System will support resourcing, execution, monitoring and measured achievement of the planned program. It will replace the Milestone Information System that is currently operating at a Service Bureau and microcomputers at regional offices. More timely information on capital and the operating program will then be available to managers and functional specialists at the park, region and HQ levels. In-depth analysis of the data will be more readily achieved in less time than is nov possible.

In 1990/91, it is planned to reassess the Concept, and reconfirm the User Requirements. Design stage is expected to take 1 1/2 years, with Implementation in late 1992.

Personnel

Human Resource Management Information System The system is being developed by DOE Corporate Personnel. HRMIS will eventually be installed at 44 CPS locations using the DOTS computer and communication network.

The remaining regional offices will be completed early in 1990-91. In addition, the Employee and Leave modules will be installed in the parks and sites that have pay clerks.

On-Line Pay is nov operational in the NCR and 4 regional offices; WRO will have access in late 1990-91. All 44 should be operational by the end of 1990-91.

The Staffing module will be the next module to be implemented in Parks in 1991-92. The remaining modules i.e. Staff Relations, Official Languages, Appraisals, etc. will not be developed until 1991/92.

Architectural and Engineering Services.

Asset Management Process (AMP): The management of the entire life cycle of the asset will be accomplished by employing and improving the existing Maintenance Management System (MMS); and by developing and implementing the Recapitalization Management Process (RMP) as the two major components of the Asset Management Process. MMS and RMP will be linked through the use of a common asset information database and shared tombstone data. Inventory and inspection methodology will be field tested in 1990/91, while further refinements to MMS will be developed, particularly simplification of the process and the reporting requirements. Systems definition will not be done until these portions of the project are completed.

Equipment Management Information System (EMIS) is the support tool to assist in managing the fleet, which is the third largest in the Federal Government. Information is needed not only to support acquisition but also to support maintenance. A replacement for DSS's Fleet Management Information System (FMIS) is being considered.

Heritage Recording Integrated Management System: The system will assist in planning and managing the production, storage and retrieval of heritage records as well as the Architecture and Engineering technical records and documents. The system is intended as the "global" system to automate all these functions. It is comprised of two major components: the Heritage Recording Management Systems (HRMS); and the Computer Assisted Recording Systems (CARS).

In 1990/91, the proposed Heritage Recording System will be presented for approval in principle.

Energy Management System: In 1990/91, the Energy Management System will be integrated to the Maintenance Management System in response to the local maintenance managers' request.

F) DEPARTMENTAL OFFICE TECHNOLOGY SYSTEM (DOTS).

The DOTS Network consists of a wide-area network linking multi-user computers across the department, and local area networks linking stand-alone personal computers within EC buildings.

DOTS provides a communications and EDP platform for all significant business applications within the department; allows any user to communicate electronically with any other user, and access information stored on any multi-user computer in the department; and provides access to public and private sector computer services outside the department. All access is via one terminal per user (ie. a personal computer, workstation, or terminal) linked to the network.

DOTS is comprised of three overall components which are: **Electronic Office Technology** which is the office system functionality available to users of DOTS, the **Business Applications Technology** as related to information systems that run on the Network, and the **DOTS Network Technology** which is the communications network. The technology includes DOTS node multi-user processors, and desktop and output devices such as terminals, personal computers, and printers.

Review of 1988/89, 1989/90.

1. **DOTS Network:** during 1988-89, the network grew from 35 computer nodes supporting 1,300 users to 65 computer nodes supporting 3,000 users and during 1989-90, 20 computers were added or upgraded on the network which grew to 4,000 users.

2. **DOTS NCR Centre:** System availability was extended to 23.5 hours/day to service staff on an "around-the-clock" basis. In order to provide high availability, the NCR system was upgraded to provide redundancy for most key components. These initiatives will allow the Department to maintain normal operations at all times including environmental emergencies such as the PCB incident at St. Basile-le- Grand.

A microwave communication link was installed to link the PVM DOTS users to the computer centre in TLC. The five-year life-cycle cost of the link is estimated to be $ 400K less than the traditional leased-line alternative. In addition there is a saving of at least half a person-year.

A software program has been implemented in the NCR and most regional computers that automatically logs off inactive terminals. This process allows us to service approximately one-third more users. In the NCR alone, this $ 15K program provides us the additional capability of serving as many DOTS users as would the addition of a fourth computer system at a cost of approximately $ 750K.

The NCR computer capacity was increased by adding and upgrading its systems over the two-year period. The number of users increased from 290 to 1,150. The Centre requested a consultation by the RCMP Security Evaluation and Inspection Team (SEIT). Key recommendations are being implemented to address user authentication; restrictive telecom access, and special studies related to sensitive applications.

3. DOTS Communications and Network Extension.

a) The consolidation of existing communications networks (e.g. AFMAS) into the DOTS network has resulted in avoided annual costs in excess of $ 600K.

b) The DOTS network has been linked to scientific and other operational computer systems and networks in C&P and AES. MacIntosh computers used by Environmental Emergency Branch can access DOTS as terminals (terminal emulation-mode) facilitating information flows in emergency situations.

c) The DOTS network (DECnet) can connect to IBM-based networks (SNA) via a DECnet/SNA Gateway. This facilitates connections with DSS for financial (Teradata), procurement (PASS) and personnel (On-Line Pay) functions from any DOTS terminal; it is also used to link to other IBM hosts (e.g. STM service bureaux and the National Library) allowing the addition of new applications at minimal communications costs.

d) DOTS electronic mail resulted in avoided postal and long distance costs of over $ 720K in 1989/90.

e) DOTS has enabled the Department to replace incompatible office technology equipment and services which had an operating cost of $2.9M annually, and avoided PC replacement costs of $3.5M per year

4. DOTS Training: during 1988/89, 1648 people were trained in 168 courses given by Digital in Basic All-In-One, Advanced Word Processing, Executive All-In-One and DECalc. DOTS refresher and enhancement courses were given at InfoPlace by in-house staff to 246 students. During the first 10 months of 1989/90, 171 courses were given by Digital for the use of the same software at an average cost of $629. Similar courses and refresher training were given by in-house staff to 458 students, for an average cost of $125.

5. DOTS Management: the Second Annual DOTS Workshop was held in November 1988 for DOTS planners, managers, technical support personnel and coordinators. This four-day workshop provided an invaluable opportunity for the exchange and updating of plans and information for over 100 key DOTS personnel.

The Site Management and Operations Manual was formally published and distributed. This is the main reference manual for implementation, operation and support of DOTS.

DOTS has received national and international recognition as a "model" for office technology implementation. DOTS managers were invited to speak at many national and international conferences and seminars. DOTS personnel have provided consulting services to other federal, provincial, foreign and U.N. government organizations and agencies.

A three-day Seminar on Information Technology and Innovation was held in Ottawa in November 1989. The seminar attracted over 350 participants including managers from DOE and other departments. Speakers from both the public and private sectors stimulated attendees concerning Information Technology's role in innovation and productivity gains. The seminar also featured a Technology Application Showcase demonstrating 30 Environment Canada information technology applications.

SOURCE, the departmental news and information dissemination system, was readied for implementation through establishment of operating procedures and a training module.

6. Applications Development and Implementation

The following major applications are now operational on or through the DOTS network:

Automated Procurement and Contracting System
Departmental Records Management System.
Environment Library Information Automated System
Departmental On-Line Pay
Automated Financial Management System
TERADATA Financial Reporting System
Minister's Invitation List and Schedule
Correspondence Tracking System
Human Resource Management Information System (Leave Reporting and Classification Modules)
Automated Policy and Procedures System (NCR Pilot)
F&A Personnel Classification and Equity
Minister's Questions and Answers Briefing Notes (Pilot)
Sustainable Development PCD Index
Parks Realty System
Parks Historic Artifacts System
Convention on International Trade in Endangered Species
Material-in-Use System

2. The following applications are in development or implementation phases:

Executive Information System
Departmental Communications Planning and Control
Cost Benefit Analysis
National Analysis of Trends in Emergencies
Resource Usage Reporting System
Environment Partnership Fund
SOURCE - Departmental Electronic News Service

Forecast of 1990/91, 1991/92, 1992/93.

The Department has prepared a DOTS Technology Strategy and Plan to describe the longer term direction for the EC DOTS Network in terms of overall objectives that must be met to provide a platform for computer communications and data processing for applications within the department.

The purpose of this Plan is to describe how the various aspects of the Strategy will be implemented via enhancements and changes to be made to the hardware, software and telecommunications components of the Network over the shorter term (up to 3 years). The Strategy and associated Plan for each of the three areas is described as follows.

Electronic Office Technology

The functionality to be provided by DOTS relating to Electronic Office Technology is described by function as follows.

Common User Interface

The DOTS Network will provide EC users with a single interface on the desktop that is simple and consistent over all its functions. The interface will allow users access to all Office Technology functionality as well as the ability to communicate with other users, and with departmental and external computers. The Network will provide the ability to inter-relate Electronic Office functionality (such as wordprocessing and electronic filing) so that data produced through one function can be accessed via another function. The interface will be fully bilingual. EC plans to continue to provide this interface via All-In-One.

Document Processing

The Network will meet departmental document processing needs with a single bilingual wordprocessor. This facility, as implemented on the Network, will support text, image, and voice and will meet Office Documentation Interchange Format (ODIF) requirements. The function will allow users to print on demand, and have access to data across the network. A higher level Electronic Publishing facility will also be provided.

EC plans to introduce Wordperfect 5.0 on the Network to transparently coexist with WPS+. Ultimately, all wordprocessing users will be migrated to a single wordprocessing facility. EC is exploring options to make an Electronic Publishing facility available to network users by conducting pilot projects to evaluate key Electronic Publishing software products.

Electronic Filing and Retrieval

DOTS will provide users with access to their data by supporting the storage, administration, and access to active departmental working documents. These documents may be retrieved by any word or phrase within all or a portion of the document (full-text retrieval), and may include non-textual formats such as spreadsheets, data base files, voice documents, FAX documents, and bit-map images. Users will have controlled (need to know) access to the data. The system will also provide facilities that are transparent to the user such as maintenance and backup for the data, and the ability to store and retrieve wordprocessing documents.

EC plans to provide a Shared Filing Cabinet capability on DOTS that will allow users controlled access to other user's data storage areas.

Activity Tracking

The DOTS Network will allow users to track items (such as letters and reports) and activities (such as sign off dates and meeting dates). This function will be forms-based and table-driven to facilitate its use. The function must be generic enough to be used across many operational areas within EC.

EC will investigate alternatives to provide an Activity Tracking facility on the Network.

Electronic Forms

DOTS will provide users with an easy-to-use electronic forms capability. This function allows the users to generate forms on DOTS to facilitate data capture. The completed forms may be printed on demand and shared with other users.

EC will investigate alternatives to provide an improved Electronic Forms facility on the Network.

Project Management

DOTS will support the management of projects by allowing project related data (events, times, resources, and users) to be captured and automatically scheduled.

EC will investigate alternatives to provide an Project Management facility on the Network.

Spreadsheet

DOTS provides users with a spreadsheet capability. This function will be easy to use, and will interface with wordprocessing, database, and graphics data.

EC will evaluate other products in order to find a more familiar and functional spreadsheet capability with a view to replacing DECalc.

Electronic Mail

DOTS supports the creation, storage, delivery, and display of message, text, image, voice and spreadsheet data between users. The DOTS wordprocessing facility is used to create and edit the messages.

EC plans to continue to provide this function via All-In-One.

High Resolution Images and High Capacity Storage

DOTS will provide a capability to support the capture, storage, access and dissemination of images of hardcopy documents. This data could be scanned from printed media or from FAXs. The system will also allow the data to be printed as required.

EC will investigate alternatives to provide these facilities on the Network.

Executive Information System (EIS) Data

DOTS will provide a capability to allow users access to summary data derived from corporate databases. The facility will automatically roll up detailed data in a usable format on demand. Data may be displayed in tabular and/or graphical format and printed on demand.

EC is currently conducting pilots of the Pilot product with a view to integrating this facility onto the Network accessible via All-In-One.

DOS-Based Functionality

The DOTS Network will provide users with DOS-based functionality via PCSA LANs.

EC will investigate alternatives to provide a limited set of DOS-based software to be made available and supported on the DOTS Network.

Time Management

DOTS assists users with the scheduling of their time, the time of others, and departmental resources such as meeting rooms, projectors, and computers. This function keeps track of schedules, indicate time related discrepancies and allow for their resolution, and generate "BFs" and "To Do" lists.

EC will continue to offer this facility on the Network via All-In-One and will continue to offer enhancements as they become available.

Other Functions

The DOTS Network will provide users with access to video text data, computer teleconferencing, and other groupware software.

EC plans to investigate alternatives to provide this functionality to users via the Network.

Business Applications Technology

The DOTS Network will provide the foundation upon which the department will develop Corporate- and Service-level business applications. DOTS will therefore offer Data Base Management System (DBMS) software that will allow these applications to be developed and operated. The DBMS functionality will be provided at two levels.

At the professional level, the software will provide developers with a complete system's development environment by supporting applications data management, systems analysis and design, coding, testing, implementation, and documentation. The software will be conducive to prototyping and will provide SQL interfaces so that systems may be distributed across the network. The software will also provide optimization tools so that DOTS Network resource usage can be minimized. The DBMS will support various formats of data including text, image, and voice.

DOTS will also support the development of "end-user", and adhoc systems by non-professionals. This functionality may be made available on DOS-based DOTS terminals (PCs) and will provide users with an easy method of meeting their individual data processing needs. This software will also provide SQL linkages to facilitate the transfer of data to and from corporate databases.

Technical support will be provided to users of approved DBMS software packages on the DOTS Network.

EC plans to: review alternative DBMS packages to coexist with its existing professional DBMS, ORACLE; pursue contractual discussions with ORACLE in order to reduce acquisition costs for the software; further reduce the impact of ORACLE on network hardware and software resources by optimizing application code and refining database designs; review other database management packages to meet its end-user DBMS requirements; and provide technical support for the corporate application initiatives.

DOTS Network Technology

The functionality to be provided by DOTS relating to DOTS Network Technology is described by function as follows.

The Network

The DOTS Network will allow the department to link desktop terminals and personal computers, DOTS multi-user processor nodes, output devices, and gateways. The local area network will be consistent with Treasury Board standards and directives as they relate to OSI. EC will recognize new government initiatives and directions in this area as they arise. The LAN will be based on Ethernet and PCSA (Lan Works) and will support all forms o information transfer including data, text, image, and voice. The wide area network will be based on DecNet/OSI standards.

The Network will provide gateways to outside computer services for access by DOTS users as required. EC will rationalize all departmental networks with the DOTS Network. The Network will provide a secure environment for data, at a minimum level of Protected A, as per government standards, directives and guidelines. The Network may be accessed externally by users, as required, in a controlled and secure manner. DOTS will include network management tools to allow its services and resources to be maintained and optimized.

The department will: implement the X.400 protocol to facilitate the transfer of documents between the Network and external systems (ie. the Government Electronic Mail and Document Exchange Service, GEMDES, and the Senior Executive Network, SEN) accessible via the DOTS Gateways; review the Government Packet Network (GPN) as a possible compatible additional network resource to Datapac; acquire additional Gateways and Links for the Network as dictated by user demand; continue to base its local area networks on Ethernet; investigate alternatives to allow public access to some departmental applications and data; investigate alternatives for integrating the Inland Waters and Environmental Emergency networks with the DOTS Network; implement PCSA. Currently, options for its support are being investigated; acquire and implement security authentication devices to control access to the Network by remote users; investigate and acquire additional software and hardware management tools to maintain and optimize the Network; and investigate the DEC Windows environment for delivery of client/server applications based on X-Windows standards on the DOTS Network.

Multi-User Node Processors

The DOTS multi-user node processors, which are currently DEC VAX processors running VMS, provide Network users with the required computer resources to meet all current and future functionality requirements described for Electronic Office Technology and Business Application Technology. The capacity provided at each node is dependant upon user demand. The size of each processor is transparent to users and does not affect functionality operation or availability.

EC will continue to base its multi-user DOTS node processor requirements on DEC VAX/VMS technology.

Desktop and Output Devices

Desktop devices will allow users access to DOTS Network functionality in a consistent manner and format regardless of the type of approved terminal or personal computer. The type of desktop device will be dependent upon the individual, the electronic office and application needs of the users. The choice of desktop device will remain independent of the communications link.

Other input and output devices will be part of the Network and will be accessible by all software, tools and applications. These devices will be sharable among users, will vary in speed and functionality as determined by user demand, and will support multiple fonts, type faces, and graphics.

EC is continually reviewing alternatives for desktop devices and output devices that are compatible with the DOTS Network.

Adapted Computer Technology (ACT)

The equal opportunity for employment of the disabled is a priority of the equity program. Recently, new technologies have emerged which allow many disabled individuals to achieve full and unencumbered access to computer systems. The department's strategy is to implement Adapted Computer Technology on DOTS to support as wide a range of disabilities as possible.

EC will investigate available Adapted Computer Technologies and implement the best technologies to support its disabled employees.

The following tables are extracted from the DOTS Strategic Report and Plan and detail DOTS past and planned expenditures from 1987/88 to 1992/93.

DOTS Costs - Departmental Totals ($000s)

	87/88	88/89	89/90	90/91	91/92	92/93	Totals
Capital:	12,916	5,280	9,628	5,256	5,081	4,358	42,519
O&M:	2,284	2,830	3,439	3,764	3,939	3,996	20,252
Salary:	1,932	2,228	2,473	2,940	3,228	3,251	16,051
Totals:	17,132	10,338	15,540	11,960	12,248	11,605	78,823

DOTS Costs - Admin. Program Totals ($000s)

	87/88	88/89	89/90	90/91	91/92	92/93	Totals
Capital:	5,716	1,119	1,330	1,600	1,530	1,530	12,825
O&M:	969	1,107	1,129	1,225	1,227	1,227	6,884
Salary:	750	1,000	1,100	1,350	1,450	1,450	7,100
Totals:	7,435	3,226	3,559	4,175	4,207	4,207	26,809

DOTS Costs - CPS Totals ($000s)

	87/88	88/89	89/90	90/91	91/92	92/93	Totals
Capital:	5,334	3,200	2,984	1,748	1,748	1,748	16,762
O&M:	1,210	1,337	1,775	1,760	1,760	1,822	9,664
Salary:	935	720	720	720	720	720	4,535
Totals:	7,479	5,257	5,479	4,228	4,228	4,290	30,961

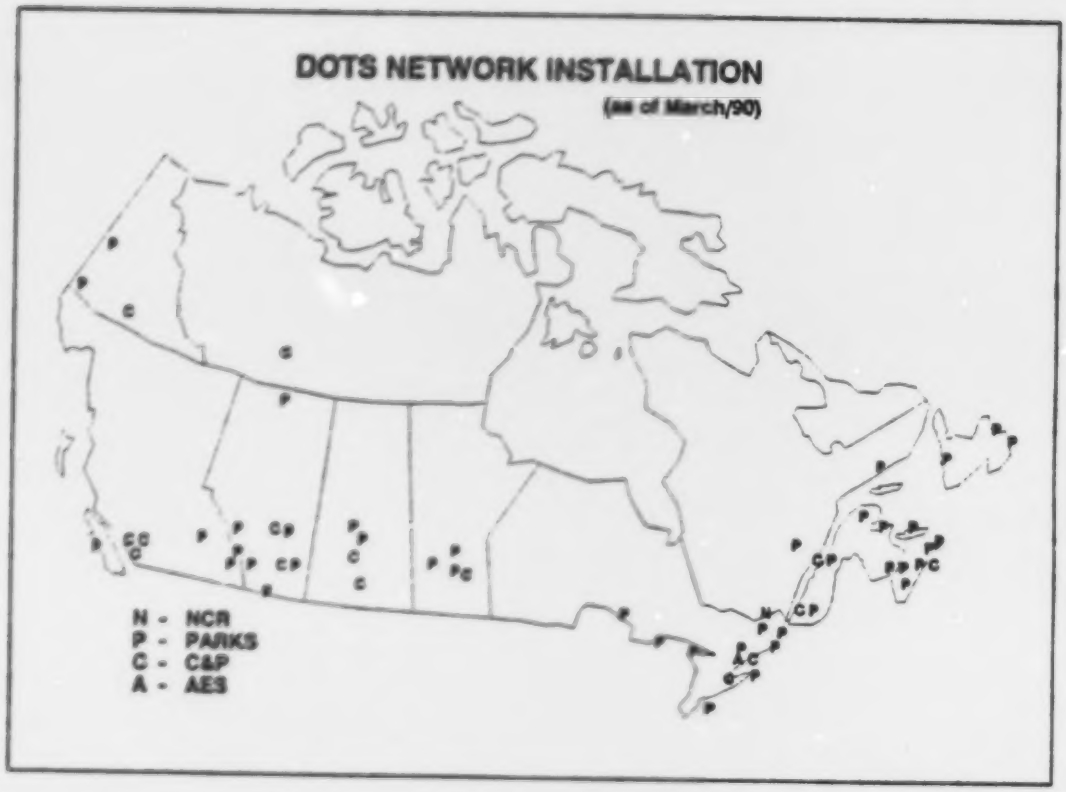
DOTS Costs - C & P Totals ($000s)

	87/88	88/89	89/90	90/91	91/92	92/93	Totals
Capital:	1,712	711	2,805	1,228	1,560	980	8,997
O&M:	94	371	498	455	578	578	2,574
Salary:	168	427	473	622	563	586	2,838
Totals:	1,974	1,509	3,776	2,305	2,701	2,144	14,409

DOTS Costs - AES Totals ($000s)

	87/88	88/89	89/90	90/91	91/92	92/93	Totals
Capital:	154	250	2,509	680	243	100	3,936
O&M:	10	15	37	324	374	369	1,129
Salary:	80	80	180	248	495	495	1,578
Totals:	244	345	2,726	1,252	1,112	964	6,643

(Discrepancies on totals are caused by rounding)


DOTS NETWORK INSTALLATION
(as of March/90)
N - NCR
P - PARKS
C - C&P
A - AES

INFORMATION MANAGEMENT TRENDS
INFORMATION MANAGEMENT PLAN

TENDANCES EN GESTION DE L'INFORMATION
PLAN DE GESTION DE L'INFORMATION

IMP TABLE 1
TABLEAU 1 PGI

Department / Agency / Program Ministère / Organisme / Programme: Environment Canada

ITEM ARTICLE	Units Unités	1988–89	1989–90	1990–91	1991–92	1992–93
A EXPENDITURE TRENDS / TENDANCES EN MATIÈRE DE DÉPENSES						
1. Total expenditures as reported this year / Dépenses totales signalées cette année	$M	71.2	77.7	81.9	86.2	89.8
2. Annual increase (decrease) / Augmentation annuelle (diminution)	$M		6.5	4.2	4.3	3.6
3. Annual increase (decrease) / Augmentation annuelle (diminution)	%		9.2	5.5	5.2	4.1
4. Total expenditures as reported last year / Dépenses totales signalées l'an dernier	$M					
5. Approved IT investments not included in plan / Investissements en TI approuvés mais non inscrits au plan	$M					
6. Total approved expenditures / Dépenses totales approuvées	$M					
7. Change – increase (decrease) / Changement – augmentation (diminution)	$M					
8. Change – increase (decrease) / Changement – augmentation (diminution)	%					
B PERSON-YEAR TRENDS / TENDANCES – ANNÉES-PERSONNES						
9. Total person-years as reported this year / Années-personnes totales signalées cette année	P-Y A-P	597	613	633	636	639
10. Annual increase (decrease) / Augmentation annuelle (diminution)	P-Y A-P		16	20	3	3
11. Annual increase (decrease) / Augmentation annuelle (diminution)	%		2.7	3.3	.5	.5
12. Total person-years as reported last year / Années-personnes totales signalées l'an dernier	P-Y A-P					
13. Approved person-years not included in plan / Années-personnes approuvées mais non inscrites au plan	P-Y A-P					
14. Total approved person-years / Total des années-personnes approuvées	P-Y A-P					
15. Change – increase (decrease) / Changement – augmentation (diminution)	P-Y A-P					
16. Change – increase (decrease) / Changement – augmentation (diminution)	%					
C OTHER IT INDICATORS / AUTRES INDICES TI						
17. Proportion of expenditures in-house / Proportion des dépenses internes	%	63	63	63	63	63
18. Proportion of acquisitions based on tendering (by value) / Proportion des acquisitions faites par appel d'offres (selon la valeur)	%					
19. Proportion of telecommunications acquired through GTA / Proportion des services de télécommunications fournis par l'ATG	%	31	31	--	--	--
20. Person-years as a proportion of departmental person-years / Années-personnes en proportion des années-personnes du min.	%	6.0	6.3	5.9	5.7	5.7
21. O&M expenditures as a proportion of departmental O&M budget / Dépenses F&E en proportion du budget F&E du ministère	%	11.5	12.7	9.0	9.6	9.9

TBC/CTC 350-10 (Rev. 89/03)

RESOURCES EXPENDED OR PLANNED BY PROGRAM / ACTIVITY
INFORMATION MANAGEMENT PLAN

RESSOURCES DÉPENSÉES OU PRÉVUES, PAR PROGRAMME / ACTIVITÉ
PLAN DE GESTION DE L'INFORMATION

IMP TABLE 2
TABLEAU 2 PGI

NOTE: Total O&M equals Total O&M in section A, IMP Table 3.
Total Capital equals Total Capital in section B, IMP Table 3.

NOTA: Le total des ressources de F&E correspond à celui de la section A du tableau 3.
Le total des ressources en capital correspond à celui de la section B du tableau 3.

Department / Agency / Program Ministère / Organisme / Programme

Environment Canada

($ M) (M $)

PROGRAM / ACTIVITY PROGRAMME / ACTIVITÉ	SERVICE / PROJECT SERVICE / PROJET	*	1988-89		1989-90		1990-91		1991-92		1992-93	
			O&M F&E	Capital	O&M F&E	Capital	O&M F&E	Capital	O&M F&E	Capital	O&M F&E	Capital
Admin. Program		D O	5.8	1.4	8.0	3.3	8.4	3.4	8.7	3.6	9.0	3.7
Atmospheric Environment Service (AES)		D O	41.4	13.1	45.6	12.9	48.0	16.0	50.5	16.8	53.0	17.7
Conservation & Protection (C&P)		D O	11.7	5.0	11.7	5.1	12.2	5.3	12.7	5.6	13.3	5.8
Canadian Parks Service (CPS)		D O	12.3	5.9	12.4	4.7	13.3	3.9	14.3	3.7	14.5	3.8
		D O										
		D O										
		D O										
		D O										
		D O										
		D O										
		D O										
	Total →	D O										
	Total →		71.2	25.4	77.7	26.0	81.9	28.6	86.2	29.7	89.8	31.0

* D – development / développement
O – operations / opérations

TBCC/TC 350-10 (Rev. 8903)

RESOURCES EXPENDED
OR PLANNED BY CATEGORY
INFORMATION MANAGEMENT PLAN

RESSOURCES DEPENSEES
OU PRÉVUES PAR CATÉGORIE
PLAN DE GESTION DE L'INFORMATION

IMP TABLE 3
TABLEAU 3 PGI

Department / Agency / Program Ministère / Organisme / Programme

EXPENDITURE CATEGORY CATEGORIES DE DEPENSES	1988–89	1989–90	1990–91	1991–92	1992–93
A O&M / F&E — * attach a list of all purchases from other government departments which exceed $1 M * annexer une liste de tous les achats auprès d'autres ministères dont la valeur dépasse 1 million de dollars					
1. Salaries Traitements	21768	23524	23966	25077	25945
2. Bundled contracts Contrats regroupés	0	0	0	0	0
3. Equipment rental Location de matériel	9672	10814	11006	11547	12116
4. Equipment maintenance Entretien de l'équipement	3791	5173	5489	5745	6013
5. Purchased services – government * Achats de services gouvernementaux *	6219	6903	8006	8380	8772
6. Purchased services – non-government ** Achats de services non gouvernementaux **	20059	21932	22469	23936	24847
7. Software Logiciels	1714	1752	2035	2127	2223
8. Other (specify) Autres (préciser)	7941	7612	8989	9426	9883
9. **Total** (this total equals total O&M on IMP Table 1) **Total** (correspond au total des dépenses de F&E du tableau 1)	71164	77710	81960	86238	89799
B CAPITAL CAPITAL					
10. Bundled contracts Contrats regroupés	0	0	0	0	0
11. Equipment Matériel	16059	20008	24948	25666	26756
12. Software Logiciels	1764	3525	2559	2741	2900
13. Construction / acquisition of facilities Construction / acquisition d'installations	7596	2474	1189	1249	1311
14. **Total** (this total equals total Capital on IMP Table 1) **Total** (correspond au total du capital du tableau 1)	25419	26007	28696	29656	30967
C TYPE OF SERVICE CATÉGORIE DE SERVICES — ** If total purchases from the private sector (A.6) exceed $1 M complete the following section ** fournir les renseignements suivants si le total des achats auprès du secteur privé dépasse 1 million de dollars					
15. Consulting Consultation	1661	2304	2795	2928	3065
16. Telecommunications Télécommunications	16013	16259	16971	18191	18841
17. Service bureau processing Traitement de façonniers	1176	1238	1277	1318	1371
18. Facilities management Gestion des installations	170	640	678	714	745
19. Dedicated facilities Installations réservées	0	0	0	0	0
20. Specialized services Services spéciaux	0	0	0	0	0
21. Data preparation Préparation des données	0	0	0	0	0
22. Other (specify) Autres (préciser)	1039	1491	748	785	825
23. **Total purchased from private sector** **Total – Achat du secteur privé**	20059	21932	22469	23936	24847

SC/CTC 350-10 (Rev. 89/03)

MANAGEMENT INFORMATION
INFORMATION MANAGEMENT PLAN

GESTION DE L'INFORMATION
PLAN DE GESTION DE L'INFORMATION

MP TABLE 4
TABLEAU 4 PGI

Department / Agency / Program Ministère / Organisme / Programme: Environment Canada

ITEM ARTICLE	DATE	STATUS ÉTAT
A Departmentally approved business practices Pratiques commerciales approuvées par le ministère		
1. IM strategy (target: October 1992) Stratégie GI (objectif: octobre 1992)		Management Information Framework Project and Information Technology Strategy.
2. IM plan (target: October 1989) Plan GI (objectif: octobre 1989)	June 1990	Future issues have June target date.
3. IT strategy Stratégie TI	Oct 1992	Preparation underway.
4. IT plan Plan TI	June 1990	DOTS Strategic Report and Plan.
5. IT policy Politique TI	April 1990	A revised Policy was submitted to the Deputy Minister for approval.
6. IT systems development methodology Méthodologie d'élaboration des systèmes TI	Feb. 1990	The System Development Guidelines were were approved by DACIM and DDPC.
7. IT benefits tracking procedure Procédure de repérage des avantages TI	Sept 1989	Business Case Analysis approach adopted.
8. IT decision / approval process Processus de décision / d'approbation TI	1989	Committee structure established.
9. IT performance measurement system Système de mesure du rendement TI		Not addressed.
10. IT workstation security policy Politique en matière de sécurité des postes de travail TI	1990	Under development.
11. IT audit plan Plan de vérification TI	1981	Departmental Audit Plan.
12. Inventory of information holdings Répertoire de fonds de renseignements	1991	See Part I, IMP-project initiated.
B Security Sécurité		
13. IT threat assessment Évaluation de la menace TI	1990	Implemented process, see attached.
14. IT disaster contingency policy Politique TI en cas d'urgence		"
15. RCMP SEIT Équipe d'évaluation de sécurité de la GRC		"
16. Sensitivity statement Caractère délicat		"
17. Security consultation Consultations de sécurité		"

TBC/CTC 350-10 (Rev. 89/03)

(CONTINUED ON REVERSE)
(SUITE AU VERSO)

MANAGEMENT INFORMATION
INFORMATION MANAGEMENT PLAN

GESTION DE L'INFORMATION
PLAN DE GESTION DE L'INFORMATION

IMP TABLE 4 (Cont'd.)
TABLEAU 4 PGI (Suite)

Department / Agency / Program — Ministère / Organisme / Programme
ENVIRONMENT CANADA

ITEM ARTICLE	DEPARTMENTAL VIEWPOINT OPINION DU MINISTÈRE
C. Emerging issues Nouvelles questions	
18. OSI migration plan Plan de migration OSI	Policy and strategy is to implement OSI and favor OSI compliant networks. No specific OSI migration planning is underway.
19. IT and official languages plan La TI et le plan des langues officielles	Procurement and system development activities are under review. A review of the Departmental Office Technology System has been done.
20. Integrated office systems management issues Questions liées à la Gestion de la bureautique	Addressed in 1986. Departmental Office Technology System implemented in over 60 sites, serving 3000 users in all regions.
D. Major government-wide initiatives Principales initiatives du gouvernement	
21. Integrated network management issues Gestion des réseaux intégrés	The Department will review integrated requirements during its strategic planning exercise for IT, in 1991-92 timeframe.
22. Microcomputer software issues Logiciels pour micro-ordinateurs	Planning and procurement guidelines in place. Common use packages such as Oracle, SAS, and DOTS PC software under site license agreements.

IMP TABLE 4

Section B. items: B-13, B-14 and B-15.

Systems and Informatics Directorate (SID) - Library

Threat and Risk Assessment:	The SID and Library system Threat and Risk Assessment has not been updated since August 1987. It should be noted that SID completed a reorganization in the fall of 1988, and is therefore uncertain if the computer room of the EDP Operations will remain.
Security Evaluation and Inspection Team (SEIT) Evaluation:	At the present time, twenty-six percent of the recommendations made in the April 1988 report have been implemented. As indicated above, it is doubtful if the rest of the SEIT recommendations will be implemented since the existence of the computer room of the EDP Operations is uncertain. A status report has been requested to this effect.
Contingency Plans:	As indicated in the 1988 ITSP - procedures have been developed for the local switching of major systems in emergency situations but are not routinely tested.

Centre Informatique de Dorval (CID) - Atmospheric Environment Service (AES)

Threat and Risk Assessment:	The CID Threat and Risk Assessment was recently updated (January 1990), and, is updated on an annual basis.
SEIT Evaluation:	Further to the May 1983 SEIT Report, eighty-eight recommendations have been implemented. In August 1989 a SEIT follow-up/preliminary inspection was conducted at the Centre Informatique de Dorval (CID). The SEIT evaluation covered the IT Security aspect such as the Organizational and Administrative Security, Personnel Security, Physical and Environmental Security, Hardware Security, Software Security, Operations Security, Small Systems Security, and Communications Security. The SEIT report has not yet been received.

Contingency Plans:

Further to the May 1983 SEIT Report, contingency plans have been implemented, operational, and tested on an on-going basis.

EDP Operations Area of the AES Downsview Facility

Threat and Risk Assessment:

In April 1988 a Threat and Risk Assessment was completed identifying EDP assets, assigned values to each and an assessment of the risk associated with each assets.

SEIT Evaluation:

The SEIT evaluation was conducted in June 1988, and the SEIT Report was received in January 1989. The Operational Systems Division, AES Downsview completed an Action Plan outlining the appropriate action to be taken as well as the expected completion dates for each of the recommendations. A status report has been requested further to the implementation of the SEIT recommendations.

Contingency Plans:

Further to the Threat and Risk Assessment and the SEIT Report, contingency plans are being developed in the areas of:

1. Data Centre Facilities
   - air conditioners
   - other
   - electrical panels and cables
   - fire proofing
   - security, fire and access alarms

2. EDP equipment
   - National Communications System (NCS)

3. Software
   - NCS operating system
   - NCS application
   - NCS database
   - other operation system, Satellite Data Reception (SDR)
   - other application (SDR)

4. Communications
   - circuits NCS

5. Data files
   - climate archive

6. People
   - managerial
   - systems
   - data production

Additional contingency plans not identified above have been included in the Action Plan as a direct result of the SEIT evaluation.

Section B. item: B-16.

SENSITIVITY ANALYSIS/STATEMENTS

Criteria have been developed and recently implemented to assist the user/owner of information/data/software to define the security requirements in terms of confidentiality, integrity and availability for all information/data/software that is processed, stored or transmitted on information technology systems within Environment Canada. The Department is in the process of producing sensitivity statements. Form attached.

Section B. item: B-17.

SECURITY CONSULTATION

In the fall of 1988, the RCMP/SEIT conducted a Security Consultation of the Departmental Office Technology System (D.O.T.S.) headquarters, including the local communications services and the computer room activities.

The consultation was conducted on the basis that none of the information processed on the D.O.T.S. network was above the base level protection, meaning PROTECTED-A and non-sensitive information.

The report only commented on the deficiencies noted by the consultation team, and, where possible, these recommendations should be implemented across the network to improve the overall security of D.O.T.S.

An action plan has been developed by the D.O.T.S. Information Technology Security Co-ordinator, and, at the present time twenty-eight percent of these recommendations have been implemented.

PERSON-YEARS EXPENDED OR PLANNED BY FUNCTION
INFORMATION MANAGEMENT PLAN

ANNÉES-PERSONNES DÉPENSÉES OU PRÉVUES, PAR FONCTION
PLAN DE GESTION DE L'INFORMATION

IMP T BLE 5
TABLEAU 5 PGI

Department / Agency / Program Ministère / Organisme / Programme

EXPENDITURE CATEGORY CATEGORIE DE DEPENSES	1988–89	1989–90	1990–91	1991–92	1992–93
HEADQUARTERS **ADMINISTRATION CENTRALE**					
Managerial Gestion	46	48	48	48	48
Consulting and planning Consultation et planification	31	31	34	34	34
System design and support Conception et soutien des systèmes	129	140	147	147	147
Equipment operation Exploitation du matériel	21	23	23	23	23
Training and end-user support Formation et soutien des utilisateurs	23	20	21	21	22
Other (specify) Autres (préciser)	66	69	71	71	71
Total →	316	331	344	344	345
OUTSIDE HEADQUARTERS **ADMINISTRATIONS REGIONALES**					
Managerial Gestion	34	34	34	34	34
Consulting and planning Consultation et planification	0	0	0	0	0
Systems design and support Conception et soutien des systèmes	135	137	144	145	145
Equipment operation Exploitation du matériel	28	26	26	26	26
Training and end-user support Formation et soutien des utilisateurs	10	11	11	12	13
Other (specify) Autres (préciser)	74	74	74	75	76
Total →	281	282	289	292	294
Total department **Total ministère** →	597	613	633	636	639

TBC/CTC 350-10 (Rev. 89/04)

Investment Table 1. New Major IT Investments

Dept/Agency/Program

AES/ACID/IISP

Dept Identifier **Title**

Climatological Ice Data Archiving Systems (CIDAS) (CCC DS)

Objective

Provision of an ice data archive that is compatible with the new digital analysis methods.

Description

An ice data archive system to: 1.) Handle increased data to Ice Centre in digital format; 2.) Catalogue archived products/messages; and 3.) Digital archive of alphanumeric and graphic products.

Expected Benefits

Refer to TB # 803240.

Estimated Resources ($M)

	Funds			
	O&M	Capital	Total	PYs
Project/Acquisition Phase		0.6	0.6	1.0
5 years operations	0.4	0.4	0.8	2.5
Total	0.4	1.0	1.4	3.5

Schedule

Design of CIDAS System - June/1990.
Delivery and implementation - Dec/1990.

Miscellaneous

Departmental Contact	Title	Telephone
John C. Falkingham	Chief, Ice Product Development	996-4552

Service Approval **Date**

Departmental Approval **Date**

Investment Table 1. New Major IT Investments

Dept/Agency/Program
DOE/AES

Dept Identifier	**Title**
	Scientific Computational Facility (SCF) Replacement (WS CMS)

Objective
To replace AES' current supercomputer facility in Dorval, Quebec.

Description

To support the strategic initiative that numerical weather prediction will improve resolution and accuracy for the first two days.

Expected Benefits

Greater supercomputer processing power is required to improve the accuracy of forecasting temperature, precipitation and wind, to provide 24 hour regional high resolution forecast guidance for severe weather forecasting, to develop climate computer models to forecast climate change brought about by increased atmospheric pollution and the enhances Greenhouse Effect, to develop monthly and seasonal Climate forecasts, to improve Acid Rain modeling, to forecast trajectories and depositions of radioactive and toxic substances resulting from environmental catastrophes and to implement the developing ocean current and iceberg drift models into operational ice forecasting to achieve realistic results.

Estimated Resources ($M)

		Funds		
	O&M	**Capital**	**Total**	**PYs**
Project/Acquisition Phase	10.0	12.1	22.1	51
5 years operations	53.9	1.0	54.9	75
Total	63.9	13.1	77.0	126

Schedule

89/91	Tendering for replacement
91/92	Conversion to new technology
92/98	Operation of new system
90/91	Disk storage tender
91/94	Disk storage installed
90/91	Ultra-speed network tender
91/92	Ultra-speed network installed
91/92	Storage Management System tender
92/93	Storage Management System installation

Departmental Contact	**Title**	**Telephone**
Bruce Attfield	Director, Scientific Computation and Telecommunications Project	(613) 996-5019

Science Approval **Date**
Departmental Approval **Date**

Investment Table 1. New Major IT Investments

Dept/Agency/Program
DOE/AES
Dept Identifier **Title**

Interactive Weather Presentation Station (WS REG)

Objective
To achieve productivity increases over a three year period.

Description

Enhance the reliability of the overall meteorological presentation system by upgrading 80 workstations, by adding up to 55 new workstations, by acquiring backup tape and power supply units and by upgrading the display software.

Expected Benefits ($M)

	O&M	Funds Capital	Total	PYs
Project/Acquisition Phase		6.0	6.0	3
5 years operations	3.5	0.5	4.0	25
Total	3.5	6.5	10.0	28

Schedule

90/91	Purchase 4 IWPS systems for regions ($100K)
91/92	Retrofit/upgrade existing 80 IWPS systems
90/91	Purchase remaining 22 tape drives
90/91	Purchase remaining 44 power backups
91/94	Purchase DM units
90/91	Delivery of required METSTAR software versions
91/93	Purchase 35 additional IWPS units for regions
90/93	Purchase 15 additional IWPS units for the CMC

Miscellaneous

Departmental Contact	**Title**	**Telephone**
Mike Minuk	Project Manager Planning & Development Division	(416) 739-4794

Service Approval **Date**
Departmental Approval **Date**

Investment Table 1. New Major IT Investments

Dept/Agency/Program
DOE/AES

Dept Identifier	**Title**
	Weather Services Offices Implementation

Objective

To implement the required EDP & Telecommunication support for six new Weather Service Offices (WSO's) across Canada.

Description

AES' strategic direction is to distribute meteorologists to more locations and to expand their consulting and information service roles. This results in Weather Service Offices, which are offices that combine forecast production with consulting and information services. In order to implement this strategy increased computing and communications support is required.

Expected Benefits

More detailed weather forecasts and better warning of severe weather events.

Estimated Resources ($M) (EDP & Telecommunications portion only)

	Funds			
	O&M	**Capital**	**Total**	**PYs**
Project/Acquisition Phase		5.0	5.0	5
5 years operations	20.0	0.5	20.5	35
Total	20.0	5.5	25.5	40

Schedule

91/92	Southern Interior BC WSO Weatherradio Network workstations and telecommunications installation completed. Saskatchewan WSO Weatheradio Network completed.
92/93	Completion of workstations and telecommunications for WSO's in Saskatchewan, New Brunswick and Eastern Ontario. Installation of Weatheradio at N.B. WSO.
93/94	Completion of installation of workstations and telecommunications for Southern Alberta and Eastern Quebec WSO's.
94/95	Southern Alberta weatheradio repeater network completed.

Miscellaneous

Departmental Contact	**Title**	**Telephone**
Joe Shaykewich	Weather Services, Policy & Planning Division	(416) 739-4975

Service Approval **Date**
Departmental Approval **Date**

LARGE COMPUTERS INSTALLED
AS OF MARCH 31 1990
INFORMATION MANAGEMENT PLAN

GROS ORDINATEURS INSTALLÉS
AU 31 MARS 1990
PLAN DE GESTION DE L'INFORMATION

INFRASTRUCTURE TABLE 1
TABLEAU 1 INFRASTRUCTURE

Department / Agency / Program — Ministère / Organisme / Programme: Environment Canada

Make and model of CPU Fabricant et modèle de l'UC	Owned or leased Acheté ou loué	HQ or region AC ou régionale	Year of acquisition Année de l'acquisition	Expected year of replacement or upgrade Année prévue du remplacement ou de la mise à jour	Number of major vendors Nbre de fournisseurs importants
CRAY XMP-28	L	R	1986	1991	1
NAS 9060	L	HQ	1986	--	1
DOTS DIGITAL CLUSTER { 2 X VAX 8550 / 1 X Vax 6440	O	HQ	1988	--	1

TBC/CTC 350-10 (Rev. 89/04)

MEDIUM AND SMALL MULTIUSER COMPUTERS AND NON-PROGRAMMABLE TERMINALS
AS OF MARCH 31 1990
INFORMATION MANAGEMENT PLAN

MINI ET MICRO-ORDINATEURS ET TERMINAUX NON PROGRAMMABLES INSTALLÉS
AU 31 MARS 1990
PLAN DE GESTION DE L'INFORMATION

Department / Agency / Program — Ministère / Organisme / Programme
Environment Canada

INFRASTRUCTURE TABLE 2
TABLEAU 2 INFRASTRUCTURE

MEDIUM AND SMALL MULTIUSER COMPUTERS
MINI ET MICRO-ORDINATEURS À PLUSIEURS UTILISATEURS

Estimated no. Nbre estimatif: 288

Operating system Système d'exploitation	%
VMS	30
Other Autres	70
TOTAL	100

Location Emplacement	%
HQ AC	20
Outside HQ Extérieur AC	80
TOTAL	100

Networks Réseaux	%
Interconnected Interconnectés	28
Not interconnected Non interconnectés	72
TOTAL	100

SINGLE USER WORK STATION
POSTES DE TRAVAIL À UTILISATEUR UNIQUE

Estimated no. Nbre estimatif: 2800

Operating system Système d'exploitation	%
MS-DOS	92
Other Autres	8
TOTAL	100

Location Emplacement	%
HQ AC	20
Outside HQ Extérieur AC	80
TOTAL	100

NON-PROGRAMMABLE TERMINALS
TERMINAUX NON PROGRAMMABLES

Estimated no. Nbre estimatif: 2560

Location Emplacement	%
HQ AC	30
Outside HQ Extérieur AC	70
TOTAL	100

TBC/CTC 350-10 (Rev. 89/04)

MAJOR SOFTWARE INSTALLED
AS OF MARCH 31 1990
INFORMATION MANAGEMENT PLAN

PRINCIPAUX LOGICIELS INSTALLÉS
AU 31 MARS 1990
PLAN DE GESTION DE L'INFORMATION

INFRASTRUCTURE TABLE 4
TABLEAU 4 INFRASTRUCTURE

Department / Agency / Program Ministère / Organisme / Programme: Environment Canada

Name of software and supplier Nom du logiciel et du fournisseur	Number of copies Nbre d'exemplaires	Cost ($ K) Coût (milliers $)	Main functions provided Principales fonctions fournies
ORACLE, Oracle Corp. (Can). Ltd.	90	230 *	Data Base Management System

* The Oracle license price vary from $ 230,000 for a full mainframe copy to
$ 30,000 for a small mini to
$ 1,600 for a PC copy.

INFRASTRUCTURE TABLE 3
TABLEAU 3 INFRASTRUCTURE

Department / Agency / Program — Ministère / Organisme / Programme: Environment Canada

Network ID / ID du réseau	No. of points served / Nbre de points desservis	Area / Secteur	Classification	Supplier / Fournisseur	Annual carrier charges / Frais annuels du télécomm.	Protocol used / Protocole utilisé	Applications
WEATHER TELETYPE	760	INTER-CITY	PLN	COMMON CARRIER	2.9M		COLLECTION & DISTRIBUTION OF WEATHER DATA
WEATHER	170	INTER-CITY	PLN	COMMON CARRIER	1.6M		DISTRIBUTION OF WEATHER MAPS
SATELLITE PHOTO	45	INTER-CITY	PLN	COMMON CARRIER	.3M		DISTRIBUTION OF WEATHER SATELLITE PHOTOS
WEATHER RADAR	45	INTER-CITY	PLN	COMMON CARRIER	.2M		DISTRIBUTION OF WEATHER RADAR IMAGERY
DOTS	60	INTER-CITY	PSDN	COMMON CARRIER			OFFICE AUTOMATION